AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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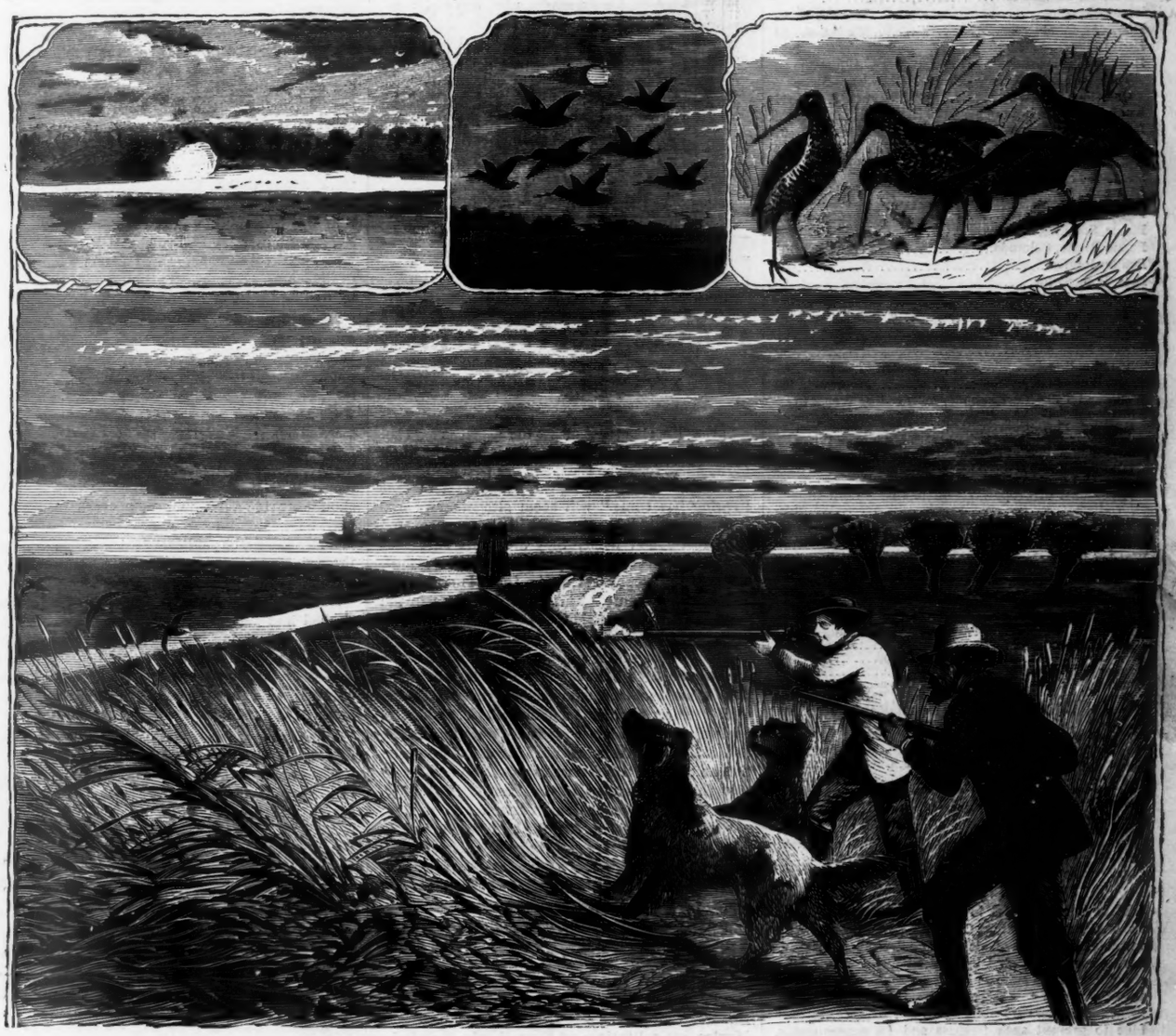

SNIPE SHOOTING.— *Drawn and Engraved for the American Agriculturist.*

The first game bird that it is permissable to shoot, after winter is over, is Wilson's, or as it is more familiarly called, "English" Snipe, and no other of the snipes is pursued so eagerly, or esteemed more highly by the sportsman. Lying well before the dog, taking wing swiftly, with a zig zag motion, requiring a keen eye and steady hand to stop him, he is the most trying, at the same time most fascinating, to the ardent sportsman, of any bird that flies. About the 10th of March, if the weather be at all favorable, the Snipe begin their Northern migrations, travelling principally at night; their peculiar squeaking note may be detected by a practiced ear, as they pass to their feeding grounds, which in the spring are along the meadow lands and skirts of uplands, where spring brooks drain from low swamps. A peculiar feature is their extreme sensitiveness to atmospheric changes; they may one day abound along the drains and thickets, but if in the night the wind should change, only a few birds will be found. On a dark, chilly, windy day, such as shown in our illustration, the snipe may be found among bunches of Cat-tails, and even in very open woods bordering the meadows. A good dog is required, one of keen nose, and obedient disposition, as a headstrong dog may disturb a meadow full of birds, and not only spoil sport, but the sportman's temper for the day.

There are other species of snipe hunted, but none so prized as the English Snipe. Bay Snipe are shot over decoys, placed upon the edge of the water, while the shooter taking his place behind a screen of hay, grass, or other shelter, thins out the flocks by repeated shots, killing great numbers. But this is hardly deemed sport by the snipe shooter, who, priding himself upon his indifference to rain, mud, and cold, and the fatigue of jumping ditches, crawling out of bog holes, and involuntary baths in spring ditches, finds his game with the aid of his dog; gives it a fair chance, cuts it down clean and suddenly, and does not leave a dozen wounded birds to flutter away and perish.

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Farmers and Sportsmen.—F. D. Curtis, of Charlton, Saratoga Co., N. Y., informs us that a valuable brood mare of his was found dead in his field, having been fatally shot by a so-called sportsman. The shooting of farm animals by trespassers, and the worrying of sheep by curs accompanying them, is far too common, and farmers are obliged, in self defence, to combine to prevent such trespass and its consequences. There should be no shooting over farms without permission from the owners, and protective legislation is very necessary to secure farmers from the annoyance and loss which occur every year. Although every citizen is permitted to "bear arms," he is not privileged to use them to his neighbor's injury or annoyance.

Hatching of Eggs.—"S. W. J.," St. Louis, Mo. It is impossible to say why eggs of "fancy" fowls should not hatch. There ought to be no good reason why they should not. The mere transportation should not affect them, as eggs have been shipped from the East Indies to England, and yet 25 per cent. of them produced chickens. The most probable cause is the close confinement of the fowls in yards. It is a well known fact in natural history, that many species of birds and quadrupeds will not breed in confinement.

Calendar for March.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	M	6 36	5 50	2 34	6 34	5 52	2 27	6 33	5 53	2 20
2	T	6 34	5 51	3 33	6 32	5 53	3 26	6 31	5 54	3 18
3	W	6 33	5 52	4 25	6 31	5 54	4 18	6 30	5 55	4 10
4	T	6 31	5 54	5 4	6 29	5 55	4 58	6 28	5 56	4 52
5	F	6 29	5 55	5 40	6 28	5 56	5 35	6 27	5 57	5 29
6	S	6 28	5 56	6 9	6 27	5 57	6 5	6 26	5 58	6 1
7	S	6 26	5 58	sets	6 25	5 59	sets	6 24	5 59	sets
8	M	6 25	5 59	7 22	6 24	6 0	7 22	6 23	6 0	7 22
9	T	6 23	6 0	8 27	6 22	6 1	8 26	6 21	6 1	8 24
10	W	6 21	6 1	9 46	6 20	6 2	9 43	6 19	6 2	9 40
11	T	6 19	6 2	11 3	6 18	6 3	10 58	6 18	6 3	10 54
12	F	6 17	6 3	morn	6 16	6 4	morn	6 16	6 4	morn
13	S	6 16	6 4	0 21	6 15	6 5	0 15	6 15	6 5	0 9
14	S	6 14	6 6	1 33	6 13	6 6	1 31	6 13	6 6	1 24
15	M	6 12	6 7	2 44	6 12	6 7	2 37	6 12	6 7	2 30
16	T	6 10	6 8	3 37	6 10	6 8	3 32	6 10	6 8	3 25
17	W	6 9	6 9	4 21	6 9	6 9	4 15	6 9	6 9	4 9
18	T	6 7	6 10	4 55	6 7	6 10	4 50	6 7	6 10	4 45
19	F	6 5	6 11	5 24	6 5	6 11	5 20	6 5	6 11	5 17
20	S	6 3	6 12	5 47	6 3	6 12	5 46	9 3	6 12	5 42
21	S	6 2	6 14	rises	6 2	6 13	rises	6 2	6 13	rises
22	M	6 0	6 15	7 4	6 1	6 14	7 3	6 1	6 14	7 2
23	T	5 59	6 16	8 6	6 0	6 15	8 4	6 0	6 15	8 2
24	W	5 57	6 17	9 11	5 58	6 16	9 8	5 58	6 16	9 4
25	T	5 55	6 19	10 13	5 56	6 17	10 8	5 56	6 17	10 3
26	F	5 53	6 20	11 17	5 54	6 18	11 11	5 55	6 18	11 5
27	S	5 52	6 21	morn	5 53	6 19	morn	5 54	6 19	morn
28	S	5 50	6 22	0 22	5 52	6 20	0 15	5 53	6 20	0 8
29	M	5 48	6 23	1 22	5 50	6 21	1 15	5 51	6 20	1 7
30	T	5 46	6 24	2 15	5 48	6 22	2 8	5 49	6 21	2 0
31	W	5 44	6 25	3 1	5 46	6 23	2 55	5 47	6 22	2 48

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	7	3 36 ev.	3 24 ev.	3 12 ev	3 0 ev.	2 40 ev.
1st Quart	14	8 21 mo.	8 9 mo.	7 57 mo	7 45 mo.	7 15 mo.
Full M'n	21	7 8 ev.	6 56 ev.	6 44 ev.	6 32 ev.	6 2 ev.
3d Quart.	29	11 41 ev.	11 29 ev.	11 17 ev.	11 5 ev.	10 35 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1875.

Spring has come!—At least the Almanac says so. Many who read this page have already had their plows afield for some time, and are well along with the work, while to others, the announcement that "spring has come" will seem altogether premature; as they look out upon their snow-covered and frost-bound fields, they are quite sure that whatever the calendar may say about the seasons, what is practically spring to them is still some weeks in the future. This wide difference in the seasons gives us some idea of the wonderful extent of our country—in one direction at least; from Florida, where winter and spring are separated by an inappreciable boundary, to Canada, where the winters are long and summers short, what an immense variety of climate and diversity of products! Spring has opened long ago to our Southern friends, and as it advances northward, awakening vegetation and calling the farmer to new labors, it occupies fully two months in the transit. The differences between the extreme eastern and western portions of our territory, while they are marked in a different manner, are equally great. The *Agriculturist* finds readers among the orange groves of Florida, and the lumber camps of Michigan and Maine; it is taken in the manufacturing villages of New England, among the coal and iron mines of Pennsylvania, and on the rich prairie lands of what a little while ago was called "the west." In the plateaus of Colorado and New Mexico, among the vineyards and wheat lands of California, up the coast to Vancouver's Island, and down the coast to Mexico, are cultivators of the soil who turn to its pages for instruction and aid. Besides all these diverse conditions under which its readers live within our own territory, it goes to all other countries—Asia, Africa, Australia, and Japan. That a journal should be found acceptable and useful to cultivators so far apart, and working under such unlike conditions, is due to the fact that the principles of agriculture are everywhere the same; the requirements of plant and animal life are alike everywhere; and when it is known what are essential to the best development of plant or animal, any one intelligent enough to take a journal at all, will know how to secure these under the conditions of climate and other surroundings in which he is placed. So with the economies of farm life; it is as important to save a dollar in Texas as it is in Massachusetts, and whatever shows how the cost of production may be lessened, is of world-wide application. The statement "Spring has come" reminds us that we cater less and less for the wants of the few to whom the spring of the Almanac is the commencement of the season's work, but more and more for that great brotherhood, whether their possessions be broad or narrow, or whether they may live north, south, east, or west, who are tillers of the soil.

Hints about Work.

Take care of the Health.—As the snow and ice disappear, much rubbish that has collected during the winters, will be uncovered. Those who live in the country are too careless about matters affecting the health. Foul surface water frequently flows into the well. Cesspools and barn-yards overflow and saturate the ground, which gives off dangerous vapors under the influence of the sun's warmth. Fevers of various kinds and other diseases attack old and young. To clean until all danger is removed, should be the first work of spring. The cellar under the house must not be overlooked.

Keep the Feet Dry.—A farmer should be provided with waterproof boots and overcoat, in which to work about drains, ditches, and wet barn-yards. There are several kinds of rubber clothing, but that which is not subject to crack is the best. That made by Z. B. Heywood, 321 Broadway, New York, is of this character, and a farmer in any part of the country may procure these goods by express, by writing for them and remitting the cost.

Hired Men.—Every farmer must decide for himself if it is better for him to hire help and cultivate more land, or cultivate less land and do without help. But it is cheaper to pay for help than to let work get behindhand, or to leave necessary work undone. The best help is the cheapest. A married laborer is as a rule the steadiest. Besides, he need not be boarded in the house, to the serious inconvenience of the family, and the destruction of domestic privacy. Farmers who hire constant help, should provide a dwelling for the men, where they may be boarded by one of themselves. Farm laborers should be paid every week or every month; these short settlements prevent mistakes and disputes. Cash purchases more than credit.

Drains must be examined, lest they become choked and water remain upon the crops. Stagnant water is injurious not only to all vegetation, but to stubble land, but much benefit may be gained by turning the spring wash from roads on to meadows or pastures, and causing it to spread as much as possible.

Top-dressing meadows or fall grain, will be found useful. Spread the manure evenly upon the snow, if any remains, and go over it with a Thomas Harrow, or the brush harrow described in another place, as soon as the ground is dry enough.

Roads and Paths.—Surface water should not be allowed to remain upon roads or paths, or in ruts. Let it off, and fill up the holes or ruts with dry earth or gravel from a bank. A dry road will stand many times as much wear as one that is wet and muddy. Paths should be made dry, or planks laid down for walks over soft ground. When wet ground gets puddled, it takes a long time to dry.

Grass and Clover Seed may be sown upon the last snow with great ease and regularity. Each strip may be sown exactly, without missing or overlapping, as the seed can be readily seen upon the surface. The seed will not be injured, as it will not vegetate until the ground becomes warm.

Fodder Crops.—A good supply of green fodder never comes amiss. Cows at pasture will always eat a meal of fresh-cut green fodder, and it helps the milk pail. An acre or two of fall plowed ground should be liberally top-dressed with manure, and sown early with oats and peas, or barley and vetches. The ground must be made rich, 2½ bushels of oats or barley, and 1½ of peas or vetches, should be sown.

Early Pasturing is a mistake. The stock is made dissatisfied, and lose their appetite for dry food. Trampling is very injurious to the soft soil, which

does not recover from it for several years. The injury to the grass is serious. Wait until the ground is dry, and there is a full bite upon the pastures. Never pasture a meadow in the spring.

Plowing.—In plowing one may "make more haste" but get "less speed." No plow should be put into ground that is wet, or when the soil sticks to a bright steel mold-board. If water is seen in the furrow, plowing should be stopped, although the surface may seem dry. The nearer plowing and seeding can be brought together, the better will it be for the crop. It will be better to run two plows by and by, than begin a day too soon. There is plenty of work to do before one begins to plow.

Implements.—All farm implements, carts, and wagons, should be carefully overhauled. Look to the bolts and nuts especially. Use the Lock Nut bolt which can not get loose, upon all implements, machines, and vehicles. Clean and oil all bearings and gearings of machinery, with the best sperm oil. Common kerosene oil and a bunch of cotton rags is the best means for removing gum and dirt. A few drops of kerosene put on a rusty nut or screw, will often loosen it. A hot iron held for a few moments to a tight nut, will loosen it by expanding it. Castor oil is the best lubricator for wagons and carriages. Use crude petroleum in place of paint, upon all tools, plows, harrows, etc., and soak the wood with it until it will take up no more. It is cheap, and need not be spared. Oily rags will take fire spontaneously in warm weather, and should not be allowed to lie anywhere about.

Seeds.—If a full supply of seed has not been procured, no time should be lost. To lose a week or two at seed time, because seedsmen are crowded, or to go without scarce seeds because the stock is exhausted, is a loss of money. The best, freshest, and *cleanest* seed only should be used. This kind costs more, but is much cheaper than poor foul seed. A change of seed is desirable, especially of such grain as peas, oats, or wheat, which are attacked with weevil, or deteriorate in weight in our warm climate. These seeds should be procured from more northern localities.

Horses.—As the work season approaches, the feed should be gradually increased. Sudden changes are dangerous. Feed only coarsely ground or "chopped" grain. Corn ears ground, (corn and cob together), are not fit food for horses. The coarse indigestible pieces of cob will irritate the intestines. Only the most digestible food should be given. A quart of linseed cake meal in the feed twice a day, for a week or two, will be a useful laxative at this season, and will help the shedding of the coat. Don't spare the currycomb.

Cows.—In-coming cows need close attention. It is well to have a large stall in a separate building, in which each one may be kept loose until she has calved. This will prevent danger to both cow and calf, and trouble with the other cows, which are apt to be restless, and lose milk upon such occasions.

Calves.—The best heifer calves should be selected to replenish the dairy. Male calves should be castrated when a week old. There is never any trouble with them at this age. Calves to be raised, should be well fed from the first, and never allowed to go back. Treat them kindly.

Sheep and Lambs.—Provide separate pens for lambing ewes. Lambs should be docked when a few days old. Draw back the skin, and clip the tail with a pair of sheep shears. It is done in an instant, and the young animal feels but little pain. Lambs intended for wethers, should be castrated at the same time. At less than a week old we have simply clipped off the scrotum with the shears, without losing a single lamb. These operations are easier in every way if done early. Great watchfulness should be exercised over the flock at this season.

Sundry Matters.—As soon as the snow melts, take a careful look over the farm. One can not fail to find some things that need to be attended to. A supply of bran and flax seed should be kept on hand, so that there will be no time lost when they are needed in a hurry for a sick animal. Keep also a small quantity of ground Ginger, Sulphur, Epsom Salts, and Compound Tincture of Benzoin, in a safe but handy place. These are all the medicines a farmer needs to keep for his animals, if he is only careful to use precautions against sickness and accidents. Repair harness. Procure a stone boat for moving plows, harrows, and seed. Remove the old heavy shoes from the horse's feet, and replace them with low shoes without calks, or with the "Goodenough" shoes. Feed all animals well and liberally, and rid the stock of all vermin. Keep all the work well advanced, and then there will never be occasion to do anything in a hurry, and so lose time.

Work in the Horticultural Departments.

Hundreds would grow fruits who do not now if they only knew what kinds to plant and where to get them. Other hundreds knowing that it is no more labor to raise a good vegetable than a poor one, would gladly attempt improvement in this direction if they knew which among the hundreds of sorts named in the catalogues they could safely try. In the present notes we have endeavored to point out to the beginner the varieties of fruits and vegetables that are likely to be satisfactory. We have not selected the finest from the critical amateur's point of view, but good reliable sorts adapted to a wide extent of country. As to where to purchase, look in our advertising columns, and you will not go amiss. Send for a catalogue and order early.

Orchard and Nursery.

Planting.—Preparations for planting may be made this month, and in some latitudes the trees may be set out. The soil should have been prepared last year, but if it was not, no time should be lost. New soils rarely need manuring, but exhausted land must be renovated. It will be useless to set out young trees in a stiff, poor soil, and expect them to give a satisfactory return; it is true they may live and bear in time, but they can never make a healthy growth, or produce good fruit. See that there are no low spots in the orchard where ice and snow may collect and remain during the greater part of the winter; trees planted in such places do not ripen their wood properly, and are liable to be injured by early frosts, and the land cannot be cultivated until late in the spring.

Pruning may be done at any time before vegetation starts. When large limbs are removed take care not to allow them to fall before severing the bark on the under side of the cut, as they may peel the bark from the trunk, thus making a bad wound. Always pare the cuts smooth, a sharp knife, chisel, or drawing-knife may be used, cover with melted grafting wax, paint, or anything which will exclude the air and rain.

Varieties.—The best guide for a novice in fruit-growing is the experience of others in similar localities, and one about to set an orchard can make no better investment than the time and money it would require for him to visit the fruit growers within a circuit of 10 or 20 miles, and learn of the successes and failures of others. To aid the novice, we enumerate some of the standard varieties of each kind of fruit, remarking that they do not succeed equally well everywhere. We give here the leading market varieties of apples, and place those of other fruits under fruit-garden.

Apples—Varieties.—If one lives near a city or town large enough to afford a market, a good share of early apples may be profitable. For New York and other distant markets, only varieties that are well known should be grown, a local variety, no matter how good it may be, if not known to dealers, will meet with a slow sale. *Summer*, Early Harvest, Large Yellow Bough, Red Astrachan, Golden Sweet, Summer Queen, Williams. *Autumn*, Chenango Strawberry, Duchess of Oldenburgh, Fall Pippin, Fall Wine, Gravenstein, Jersey Sweet, Keswick Codlin, Maiden's Blush, Porter, Washington Strawberry. *Winter*, Am. Golden Russet, Baldwin, Ben Davis, Canada Reinette, Esopus Spitzenburgh, Fameuse, Jonathan, King of Tompkins County, Lady, Monmouth Pippin, Newtown Pippin, Northern Spy, Peck's Pleasant, Rambo, R. I. Greening, Roxbury Russet, Talman's Sweet, Twenty Ounce, Winesap, Yellow Bellflower. There are some 2,500 described varieties, and this list by no means includes all of the best, even for marketing, but it will serve to direct the inquiries of a beginner.

Fruit Garden.

Planting.—The general directions given under the orchard, apply to this department equally well.

Currants.—If cuttings were placed in the cellar in the fall, they may be planted as soon as the weather will allow. Make the cuttings 6 inches long, set them in a trench 3 inches apart and deep enough to cover all but 2 or 3 buds, pack the earth in firmly and keep clear of weeds. The best sorts for market are Versailles and White Grape. The Black Naples is the best black. Give established bushes a good manuring, and apply a mulch before dry weather comes.

Gooseberries are propagated in the same manner as currants, and require the same general treatment. Unless one can give great care it is useless to try the English sorts. The American varieties rarely mildew, and furnish an abundance of fruit which is generally used in an unripe state for cooking. Downing's and Houghton's are the best.

Blackberries.—If the old canes were not cut out after the fruiting was over last year, do it at once. Manure if not done last fall. New plants are made from the abundant suckers which most kinds form, or from root cuttings made in the fall. Take up the suckers as soon as the frost is out, with a good bit of root attached, and set six feet apart in rows, cutting the cane or stem back to the ground. The most generally successful variety is the Kittatinny; Wilson's Early is a good market sort. New Rochelle or Lawton is good when thoroughly ripened, but tender in many places.

Raspberries.—Many kinds are propagated in the same way as blackberries. These too should be set early. Old plants, which should not have more than 3 or 4 canes to the stool, will need manure, and later a mulch. Provide stakes, wire, or some support to tie to. The varieties are numerous, and a selection is difficult. Hudson River, Antwerp, and Brinckle's Orange are the finest, but require protection in winter. Clarke, Herstine, are good, and usually hardy. Philadelphia is hardy, most prolific, but not first quality. Highland Hardy is a new sort highly recommended.

Black Caps, or black raspberries; these with a few red-fruited kinds are propagated only by the rooting of the ends of the stems, they form no suckers. Mammoth Cluster or Miami, Seneca, and Doolittle, are among the best.

Strawberries.—The treatment of old beds will depend upon the system of culture. In the garden where the plants are in rows, and were mulched last fall, all that need be done is to go over the beds, when growth begins, and remove the hay or other mulch from directly over the plants and leave it until the fruit is off. Spring planting is vastly preferable to fall planting. Set the plants as soon as the frost is out. In garden culture we prefer to grow in rows, set the plants a foot apart in rows 3 feet from one another. Work the soil deeply and manure heavily. The varieties are many, but at present we cannot improve on the list given last year. The best variety for all soils and situations we consider to be Charles Downing. The Wilson has had that place, but it is of far inferior quality; the Charles Downing is the best general family berry, and it is good for marketing. For early, Nicanor for heavy, and Downer for light soils; for main crops, Charles Downing and Wilson, on both soils. For late, Triomphe de Gand and Jucunda on heavy, and Seth Boyden and Kentucky for light soils. Gen. Cheney has a high reputation, but we have not tried it. As a variety of the first excellence, we mention Black Defiance, and for great size, the Champion.

Cherries on account of insects and diseases have been well nigh abandoned in many places. Wherever it will succeed, the cherry should be planted. It cannot be so decidedly dwarfed as the pear and apple, but on Mahaleb stock and properly pruned, the trees may be kept of moderate size. The young trees should be started with a low head and kept

compact by pruning. The varieties are many. The Early Richmond, a very early excellent cooking cherry, succeeds where better sorts fail. Among the best for the garden are Black Tartarian, Coe's Transparent, Rockport, Louis Philippe, Late Duke, and Black Hawk.

Plums have been subject to the same drawbacks as cherries. By persistent jarring of the trees and catching the curculio, good crops may be had. If worked on the Canada or wild plum, it may be kept small by pruning. Green and Imperial Gages, Coe's Golden Drop, Jefferson, and Washington are among the best. The Wild Goose and other natives are not curculio proof, but are worth trying.

Peaches may be kept in a very compact form by proper shortening of the branches. Amateurs who have the time should look at the Cordon training described in the *Agriculturist*. Those who grow peaches on the large scale for market select such varieties as will ripen in succession through the season, without much regard to quality. For the garden, Early Beatrice, Hale's Early, Early York, Oldmixon Free, George the Fourth, and Ward's Late Free, would be a good selection.

Pears.—Where space is limited, dwarf trees on quince may be planted, but standards may be kept of moderate size by training as pyramids, and are much more productive. The one variety that succeeds almost everywhere is the Bartlett. If there is but one tree on the place it is likely to be this. There is a wide range for selection. A few choice garden sorts are, *Early*, Doyenné d'Eté, Clapp's Favorite, Bartlett, Doyenné Boussock. *Fall*, Duchesse d'Angouleme, (on quince), Belle Lucrative, Sheldon, Seckel, Beurre Bosc, Louise Bonne de Jersey, (quince). *Late Fall and Winter*, Beurre d'Anjou, Lawrence, Vicar of Winkfield, Winter Nelis.

Quinces may be raised from cuttings a foot long set with only two buds above the surface, or more surely by layers. If care is taken with the young trees they may be given a handsome form. The Apple or Orange is the most generally grown. Rea's Seedling, (rather scarce), is the largest and finest.

Grapes.—It must be a small yard that has not room for one vine, and every farmer's family should have all the grapes they can eat and some to give away. Those who grow for market will not look here for advice. The universal grape, corresponding in popularity to the Bartlett among pears, is the Concord. Every one can grow it, as a cutting of 2 or 3 buds is very sure to make a plant. Many others can be raised in the same way, while some must be started under glass. Buy only one year old vines; cut back to 2 or 3 buds, and let only one shoot grow. The list is a large one, and tastes differ. Concord, Creveling, Barry, Eumelan, Senasqua, and Wilder are all good black kinds, Catawba and Iona in favorable localities, Delaware and Salem are among the best of the reds. The Croton and Martha are the white kinds most likely to succeed.

Mulberries.—Downing's Everbearing and the Black Persian are the best.

Kitchen Garden.

No matter how far south one may live, he likes to have his vegetables, or some of them, earlier than they can grow from seeds in the open ground, hence some glass protection is in common use. A spot of ground covered by a frame, upon which are glazed sashes, is what is known as a

Cold Frame.—The frame is 12 inches high at back, 8 inches in front, and of a size to fit the sash. Sashes 3 x 6 feet are sold by sash makers glazed at about $3 each. They may be home-made, or old windows may be used. The sash should slope towards the sun. Light shutters or mats should be at hand to put on at night and very cold days. Seeds may be sown in such a frame much earlier than in the open ground, and the young plants protected from cold nights will grow rapidly. The sashes must be lifted at the upper end and held open by a stick during the warmer part of the day, and in warm days be taken off. Here the heat of the sun is retained by covering at night, but in

Hot-Beds heating material is used to warm the soil; this is usually fermenting manure. The simplest hot-bed for ordinary gardens is made by digging a pit 2½ feet deep and of a length and width to suit the sashes; this is planked up all around, the rear planking reaching 12 inches, and the front 4 inches above the surface of the ground, the ends sloping from back to front, which should face the south. The heating material may be stable manure brought into active heat by turning a few times at intervals of a few days, or a part this and a part leaves. A good plan is to put in a foot of leaves, then 18 inches of manure, or it may be all manure, in both cases trodden down evenly and firmly, over this place 6 inches of good soil, or if boxes are used, (see page 99), only enough to make the surface even. There should be strips across the frame from front to rear for the sashes to run upon. The heat may be very violent at first, when it falls to 90° sow the seeds in rows about 4 inches apart, or what is better, set in the boxes in which they have already been sown. Another method is to build up a square pile of fermenting manure or alternate layers of manure and leaves, beating it firm with the fork and keeping it compact. This should be two feet wider and longer than the frame, made like that described for the cold frame, which is here set upon the manure instead of upon the ground. Soil is to be placed upon the manure, or boxes may be used. Great care in opening in the day and closing and covering at night are demanded, and unless one has time to give it proper attention, he had better rely upon

Window-Boxes, which are well nailed flat boxes about 3 inches deep and of any convenient size otherwise. These are to be nearly filled with good soil, the seeds sown, and then set in the window of the kitchen or other warm room. Of course water must be given as needed, and when the plants are large enough to handle, with three leaves besides the seed-leaves, they are to be transplanted to other boxes and set an inch or two apart, and shaded until they recover. If they grow so large as to crowd, transplant again. We have given directions over and over again about hot-beds, frames, and the like, but every season there are many to whom these things are all new and strange, whose inquiries we have to regard.

Varieties.—Every year new sorts of vegetables are offered for which superior excellence is claimed. We test all such, and so do others who are on the look-out for novelties. In the following list we give the names of varieties that not only have been tested on our own ground, but have received general approval.

Asparagus.—Conover's Colossal is the best. Seeds may be sown or plants one and two years old purchased. In field culture for market set the plants at least 2 feet apart each way, (some set 3 x 4), and cultivate by horse implements. In small gardens rows 2 feet apart with the plants a foot apart will be better than closer. Remove the covering from old beds and give a dressing of well rotted manure, forked in carefully so as not to injure the crowns.

Beans must not be planted until there is no danger of frost. Early Valentine and Dwarf Wax are good bush sorts for early snaps. Caseknife, Large and Small Limas, are best pole sorts for shelling; for snaps the Giant Wax and Asparagus bean.

Beets may be sown after the ground is thawed, in rows one foot apart, sowing thickly to give plenty of beet greens. The best early is Egyptian Blood, Bassano is good, and for late the Long Blood.

Borecole or Kale, and Brussel's Sprouts are varieties of the cabbage, and require the same treatment. Of Borecole, the kind known as German Greens is most popular. The Dwarf Brussel's Sprouts are best.

Cabbages.—Set out plants from the cold frame in which they were wintered, as soon as the ground is clear of frost. Sow seeds for second early in hot-beds this month. Jersey Wakefield for earliest, Early Winningstadt and Early Summer, and Ulm Savoy for medium, and Drumhead, Flat Dutch, Drumhead Savoy, and Red Dutch for late.

Cauliflower.—Sow Early Paris and Early Erfurt in hot-beds the same as cabbages. Give them the richest spot in the garden, and careful watering and cultivation; even then they often fail; but they are so fine that it pays to take the trouble even if one can only get a partial crop. Set out plants that were wintered in cold frames.

Carrots.—For table use the Early Horn is best for both early and late; it is not so large a cropper as Long Orange and others. Sow in rows a foot apart.

Celery.—Sow seeds in a slight hot-bed, or early in the open ground. Dwarf White, Boston Market, and Dwarf Crimson are best.

Chives start early in the spring; clear away the old tops and spade under some manure. Propagate by dividing old clumps.

Corn must not be sown till all danger of frost is past. Among the best are Early Minnesota, Triumph, Moore's Concord, Mexican, and Stowell's Evergreen. If planted every two weeks until the last of June, a succession may be had until late fall.

Cucumbers.—Sow on the earth-side of pieces of sod and place in a hot-bed; set these in the hills when frosts are over, or prepare a few hills in the open ground with fermenting stable manure, and cover with a hand glass. Either method will give a crop far in advance of the open ground plantings; Early Russian, White Spine; Green Prickly is to be sown in June, for pickles.

Egg Plant.—Sow in the warmest part of the hot-bed, as the seeds require more heat than most other, Long Purple is earliest, Black Pekin and Improved New York are largest and best.

Horseradish is easily grown from sets in well-manured ground, and the product is much better if planted anew every year. Set two feet apart and one foot in the rows. It may be planted between the rows of early cabbages, as they will be out of the way before that has made much growth.

Kohl-Rabi.—Sow Early White in open ground in rows two feet apart, or sow in seed-bed and transplant in rows ten inches apart.

Leek.—Take up those left in the ground over winter. Sow seeds of Large Flag the same as onions.

Lettuce.—Set out plants from the hot-bed and cold frame as soon as large enough to handle and frosts are over. Sow seeds for second early, uncover and loosen the soil around that sown last fall in the open ground. The varieties are many; we have found Early Simpson, Hanson, and Tennis Ball to be satisfactory.

Melons require similar treatment to cucumbers. White Japan, Cassaba, Hackensack, and Ward's Nectar are all good, and the catalogues give others; do not plant until the ground is warm.

Onions.—Sow Yellow Danvers and Early Red in drills 15 inches apart in an abundantly manured soil. A good dressing of wood ashes may be given after the plants are well up. Onions from seed are not certain south of New York. In such localities sets must be planted; both seeds and sets should be got in early. Also put out potato and top onions.

Parsley seeds need soaking for a few hours in warm water before sowing. Sow early. Thin to 4 inches. The Double or Moss Curled is best.

Parsnips.—Sow early in deep, rich soil; the Hollow Crown or Cup in 18 inch drills; dig roots which were left in the ground over winter.

Peas.—It is our practice to put in a few rows of Daniel O'Rourke or Carter's First Crop as soon as the ground is thawed. They may now and then fail, but the risk is worth taking. These are not of so good quality as the wrinkled sorts which will rot if sown before the soil becomes somewhat dry and warm. The best early wrinkled pea is Alpha. For main crop there is nothing better than Champion of England, but there are numbers in the catalogues that may be tried. In small gardens the dwarfs, which need no stakes, are valuable, as they can be put in various spare places, between rows of later plants and thus utilize every foot of ground. Little Gem and Blue Peter are both excellent. Sow the tall varieties in double rows 6 inches apart, and set the brush between them.

Peppers.—Treat the same as egg plants. Squash for pickling and Sweet Mountain for stuffed pickles.

Potatoes.—Only early sorts should find a place in the garden. A few may be forwarded by starting the sets in boxes of earth in a hot-bed, and some

may be put in the open ground early at a venture. Early Rose and Early Vermont are the established early varieties. Alpha and Snowflake are varieties of great promise, and Thorburn's Early Paragon is claimed to be "the best early yet introduced."

Radishes.—If wanted early, sow in a gentle hot-bed or cold-frame. French Breakfast, Olive Shaped, and Early Turnip. When the ground is open sow in drills a foot apart once a week for a succession.

Salsify.—Sow seeds early the same as parsnips. Dig roots left in the ground.

Scorzonera.—Treat the same as salsify; by many is thought to be superior to it.

Spinach.—Round Leaved is best; sow early in drills a foot apart. New Zealand for summer use is sown when ground is well warmed. Uncover beds sown last fall; hoe between the rows and it will soon be fit for use.

Sorrel is valued by many as early greens; mixed with spinach gives that a pleasant acid flavor. Sow in seed bed and transplant into rows 18 inches apart and 15 inches in the rows.

Sweet Potatoes.—If only a few are wanted it is cheaper to buy the plants than to grow them. Southern Queen and Nansemond are best. The sets may be grown by placing the potatoes in good soil in the hot-bed.

Squashes.—If desired early they may be started in the hot-bed on sods as directed for cucumbers. Summer Crookneck is best early; many like the Scolloped Bush, of which there are are white and yellow. Boston Marrow and Turban are best late summer and fall, and for winter the Hubbard and Yokohama are standard sorts. See the new Butman noticed on page 48, last month. The late sorts need a warm and highly manured soil with more manure in the hills.

Tomatoes.—There are many good sorts, but one cannot go amiss if he takes Conqueror or Canada Victor for early, and Trophy for main and late crops. Start in hot-bed or window boxes and transplant once, if not twice, before setting out. A few may be petted in pots to be turned out when it is safe.

Turnips for spring must be sown very early. Early Flat Dutch is best early. For late, Red-top Strap-leaf is best of the flat kinds. Of the Ruta Baga sorts the White French is superior to all others for the table and best for garden purposes.

Flower Garden and Lawn.

Notes in this department as well as that of

Greenhouse and Window Plants.

must be deferred until another month, as we have taken more space for the others than will be again required. In the first only works of preparation can be done in most localities. The increase of sunlight will stimulate rapid growth of plants under glass; with these the principal things to look after are propagating, killing insects, and the gradual hardening off of such as are to go out of doors.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Feb. 13th, 1875, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	216,000	513,000	2,811,000	9,200	218,000	374,000
23 d's *last* m'th	324,000	459,000	1,617,000	13,800	57,000	407,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	279,000	2,096,000	2,907,000	21,000	142,000	1,119,000
23 d's *last* m'th	291,000	2,911,000	1,918,000	34,000	251,000	2,105,000

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	216,000	513,000	2,811,000	9,200	218,000	374,000
26 days 1874	402,000	3,175,000	1,004,000	61,000	106,000	895,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1875	279,000	2,096,000	2,907,000	21,000	142,000	1,119,000
26 days 1874	296,000	2,312,000	1,597,000	131,000	813,000	1,437,000

3. *Stock of grain in store at New York.*

	Wheat.	*Corn.*	*Rye.*	*Barley.*	*Oats.*	*Malt.*
	bush.	bush.	bush.	bush.	bush.	bush.
Feb. 8, 1875	3,269,000	1,408,485	50,899	266,928	945,137	157,120
Jan. 11, 1875	3,675,122	1,049,900	50,899	191,470	877,014	145,647
Dec. 7, 1874	4,513,396	1,226,973	15,925	168,391	890,899	135,622
Nov. 9, 1874	3,680,141	1,727,510	19,123	117,185	794,722	135,882
Nov. 10, 1873	1,720,338	3,133,896	22,907	232,942	735,153	82,674

4. *Exports from New York, Jan. 1 to Feb. 12.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
	bbls.	bush.	bush.	bush.	bush.	bush.
1875	212,846	1,481,150	4,735,119	90	12,549	19,482
1874	291,169	2,916,000	1,442,700	104,315	—	10,900
1873	152,290	705,286	2,004,369	—	6,700	2,560
1872	—	896,639	2,078,308	70,603	—	2,682

Gold has been up to 115¼, and down to 113, closing February 12th, at 114¼ as against 112¼ on January 12th.... Breadstuffs have been depressed and generally lower in price, the offerings having been more liberal, while the demand for home use and shipment has been on a restricted scale. The export inquiry has been checked by the unfavorable foreign advices. Toward the close, Flour, Wheat, Rye, and Barley, favored buyers; while Corn and Oats were quoted stronger, these influenced, to some extent, by speculative purchases....Provisions have been generally less freely dealt in at reduced prices. Hog products have been particularly weak and variable ....Cotton has been more active, and quoted firmer.... Wool and Tobacco have been less sought after within the previous range....Hops have been quoted lower, on a limited business....Hay, Straw, and Seeds in fair request, and held with firmness.

CURRENT WHOLESALE PRICES.

	Jan. 12.	Feb. 13.
PRICE OF GOLD	113 3-8	114 5-8
FLOUR—Super to Extra State	$4 00 @ 5 75	$3 85 @ 5 65
Super to Extra Southern	4 75 @ 7 25	4 60 @ 7 25
Extra Western	4 60 @ 8 00	4 50 @ 8 00
Extra Genesee	5 00 @ 6 75	4 90 @ 6 50
Superfine Western	4 00 @ 4 50	3 85 @ 4 35
RYE FLOUR	4 00 @ 5 25	4 00 @ 5 20
CORN-MEAL	4 00 @ 4 85	3 90 @ 4 75
WHEAT—All kinds of White	1 25 @ 1 35	1 24 @ 1 32
All kinds of Red and Amber	1 07 @ 1 31	1 02 @ 1 26
CORN—Yellow	87½@ 90	82 @ 85
Mixed	86 @ 96	80½@ 82
White	87 @ 89	81½@ 85
OATS—Western	67 @ 71	66 @ 70
State	65 @ 71	66 @ 70
RYE	93 @ 96	90 @ 96
BARLEY	1 25 @ 1 60	1 20 @ 1 55
HAY—Bale, ₱ 100 ℔s	55 @ 95	55 @ 95
STRAW, ₱ 100 ℔s	45 @ 65	45 @ 70
COTTON—Middlings, ₱ ℔	15¾@ 15¾	15¾@ 16
HOPS—Crop of 1874, ₱ ℔	37 @ 50	32 @ 47
FEATHERS—Live Geese, ₱ ℔	35 @ 65	35 @ 65
SEED—Clover, ₱ ℔	10¾@ 10¾	11¼@ 11¾
Timothy, ₱ bushel	2 75 @ 2 85	2 80 @ 3 00
Flax, ₱ bushel	2 05 @ 2 40	2 20 @ 2 30
SUGAR—Refi'g & Grocery ₱ ℔	6 @ 9¼	5¾@ 8¾
MOLASSES, Cuba, ₱ gal	Nominal.	33 @ 39
New Orleans, ₱ gal	59 @ 67	55 @ 66
COFFEE—Rio (Gold)	17¾@ 20¾	17¼@ 19½
TOBACCO, Kentucky, &c., ₱ ℔	9 @ 25	9 @ 25
Seed Leaf, ₱ ℔	8 @ 60	8 @ 60
WOOL—Domestic Fleece, ₱ ℔	28 @ 65	28 @ 65
Domestic, pulled, ₱ ℔	27 @ 55	27 @ 55
California, clip	16 @ 37½	16 @ 36
TALLOW, ₱ ℔	8¾@ 9	8¾@ 8¾
OIL-CAKE—₱ ton	43 50 @47 00	44 00 @47 50
PORK—Mess, ₱ barrel	20 00 @20 50	19 25 @— —
Prime Mess, ₱ barrel	18 75 @19 50	18 00 @18 25
BEEF—Plain mess	9 50 @10 50	9 50 @10 50
LARD, in trcs. & barrels, ₱ ℔	13½@ 14¼	13½@ 14¼
BUTTER—State, ₱ ℔	25 @ 45	20 @ 40
Western, ₱ ℔	18 @ 35	15 @ 32
CHEESE	6 @ 16¼	6 @ 16¾
BEANS—₱ bushel	1 60 @ 1 70	1 40 @ 2 30
PEAS—Canada, free, ₱ bu	1 25 @ 1 35	1 15 @ 1 25
EGGS—Fresh, ₱ dozen	29 @ 33	33 @ 42
POULTRY—Fowls	10 @ 18	8 @ 17
Turkeys—₱ ℔	10 @ 17	12 @ 18
Geese, ₱ pair	1 00 @ 2 25	1 37 @ 2 12
Ducks, ₱ pair	50 @ 1 00	— @ —
PIGEONS, ₱ pair	— @ —	30 @ 35
GROUSE, ₱ pair	50 @ 65	35 @ 50
PARTRIDGES, ₱ pair	40 @ 65	70 @ 1 00
VENISON, ₱ ℔	10 @ 16	— @ —
WILD DUCKS, ₱ pair	40 @ 1 75	40 @ 1 50
WILD TURKEYS, ₱ lb	15 @ 20	15 @ 20
QUAIL, ₱ dozen	90 @ 2 00	1 50 @ 1 75
HARES, ₱ pair	30 @ 50	45 @ 50
RABBITS, per pair	30 @ 40	35 @ 40
TURNIPS ₱ bbl	1 00 @ 1 25	1 25 @ 1 37
CABBAGES—₱ 100	4 00 @ 7 50	5 00 @ 8 00
ONIONS—₱ bbl	2 25 @ 3 00	2 25 @ 3 50
POTATOES—₱ bbl	1 62 @ 2 25	1 50 @ 2 12½
SWEET POTATOES—₱ bbl	3 00 @ 4 00	3 50 @ 4 00
BROOM-CORN	9 @ 15	9 @ 15
GRAPES, ₱ ℔	8 @ 9	— @ —
APPLES—₱ barrel	1 00 @ 2 25	1 00 @ 2 25
CRANBERRIES—₱ bbl	5 00 @10 00	4 50 @ 9 50
GREEN PEAS, new, ₱ bushel	1 85 @ 1 90	1 85 @ 1 90
SQUASH, ₱ bbl	— @ —	1 75 @ 2 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Jan. 18	8,923	153	619	28,053	37,936	75,684
Jan. 25	9,474	74	629	23,476	35,474	71,127
Feb. 1	7,281	121	850	23,655	24,850	56,757
Feb. 8	8,148	80	690	18,229	29,685	56,902
Total for 4 Weeks	33,826	428	2,788	93,413	127,945	260,470
do. *for prev. 4 Weeks*	29,808	318	3,097	73,442	134,935	243,600

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,456	107	697	23,870	31,986
do. do. *last Month*	7,452	79	774	18,860	33,734
do. do. *prev's Month*	8,254	70	1,369	23,346	49,442

Beeves.—The market during the past month has been an unfortunate one for sellers. Unfavorable weather and dull business has depressed prices and weakened the market. The worst business of the season has been done in the past four weeks. At the close there was a little improvement, which helped to meet the advance in the West, but the market was weak. The new Stock Yards at 60th to 65th sts., were opened on Feb. 8, and hereafter no business will be done on Sundays. Monday will be the opening day, and yards and scales are to be locked on Sundays by united consent at all market places. Prices at the close ruled ¼c. to ¼c. ₱ ℔. above last week, with sales at 8¼@13¼c. ₱ ℔ for native to extra steers to dress 54 to 58 ℔s. ₱ gross cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Jan. 18	8 @14¼c.	10¾@11¼c.	11 c.
Jan. 25	7 @13¾c.	10 @11 c.	10¼c.
Feb. 1	7 @14 c.	10 @10½c.	10¼c.
Feb. 8	8 @14 c.	10½@11 c.	10¾c.

Milch Cows.—The market for cows has been steady and fair. There was a demand for all sorts at $45 @$90 per head for cow and calf....**Calves.**—The sale for calves has been dull, but an improvement was noticeable at the close for milk fed veals. The best Bucks Co., Pa., veals sold at 11c. ₱ ℔, others at 8¼@10¼c. ₱ ℔; grassers brought $8@$17 ₱ head, the latter price being paid for fine western calves....**Sheep.**—The market has been very unsteady for this stock; generally prices have given way for poor sheep. At the close fair to prime sheep were fully ¼c. ₱ ℔ better, bringing 7¼@8c. ₱ ℔. Poor sheep were selling from 5¼c.@5¾c. ₱ ℔.... **Swine.**—There have been no live hogs offered. Dressed hogs have improved, advancing to 8@8¼c. for fair Western and 8¼@9¼c. for City dressed.

To be Had without Money.—There will be found upon our Premium List for the year 1875, a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but a little *well directed effort.* Among these are: **Beautiful Silver-Plated Articles—Fine Table-Cutlery—Gold Pens with Silver Cases—Children's Carriages, Swings, etc.—Watches—Pianos—Melodeons—Pocket-Knives—Guns—Cultivators—Sewing, Knitting, and Washing Machines—Books, etc., etc.**—Send for our Illustrated Premium List, and see how easy you can obtain one or more of these good and desirable articles.

containing a great variety of Items, inc'uding many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remitting Money:—Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

☞ **N.B.—The New Postage Law.**—On account of the new postal law, **which requires pre-payment of postage by the publishers, after January 1st, 1875,** each subscriber must remit, in addition to the regular rates, **ten cents for prepayment of postage by the Publishers, at New York, for the year 1875.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Bound Copies of Volume Thirty-three are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last eighteen volumes (16 to 33) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Our Western Office.—Our friends in the West are reminded that we have an office at Lakeside Building, Chicago, Ill., in charge of Mr. W. H. Busbey. Subscriptions to *American Agriculturist* are taken there, and sample copies of the paper and chromo are delivered, and orders received for advertising on the same terms as in New York. All our books are on sale at the Western Office. Please call and examine, buy, subscribe, and advertise.

TWO COMMON MISTAKES.—First, that the **Premiums** are only available to a few individuals who have special facilities for securing them. Anybody, anywhere, can with trifling effort get together a larger or smaller list of names of subscribers, and in return receive **free** one or more of the large number of valuable and desirable articles offered in the premium list. **Second,** that these premiums are available only about the beginning of the year. They will be open

to all until next June, and all the names sent in by any person between October 1 and June 30, can be counted together for premiums. The premium desired for any list of names up to any day, will be sent whenever desired. March and April are both good months for making up premium clubs or enlarging those already begun. Spring work is opening, and those beginning to plan out their work will all the more feel the need of the aid of such a journal as this. If any one has failed to receive a copy of the **Illustrated** Premium List, please send for a free copy at once, by Postal-Card or otherwise.

SPECIAL OFFER.

The Beautiful Chromo, "The Strawberry Girl."

[Size, 14×20, in 18 colors.]

To every subscriber, whether new or old, whose subscription for the year 1875, whether single or in a club, shall be received while this offer lasts, and who shall send with his subscription 50 cents extra to pay for mounting, postage, etc., we will send one of the beautiful pictures, **"The Strawberry Girl,"** which has so delighted those who have seen or received it. This chromo will be mounted *on muslin*, with directions for putting it on a stretcher for framing. We have but a limited number of these fine pictures in stock, and this offer will continue only while any remain.

Help!—*Do somebody* help us to find out where a person lives who writes letters, and forgets his State, sometimes his town, and not rarely his name. Probably 50 persons are now looking for letters which we can not send to them, simply because be do not know where to direct or to whom.

A Great Convenience is the present facility for sending parcels through the mails. Any package of seeds, plants, books, merchandise, etc., not weighing over **four pounds** can be sent to the most distant and most secluded localities for 8 cents a pound—if the package be not perishable and will not be injurious to other mail matter. This for example gives the dweller in a remote section of Washington Territory a chance to secure good seeds from the best eastern dealers, or a dress pattern from New York City at a very trifling cost for carriage. We are very glad to pay our share of any deficit in Post-Office revenue while it affords such conveniences to our pioneers and other less favored inhabitants. Our readers, wherever located, can look over our advertising pages, filled by trustworthy men, and select and receive whatever they may wish in the way of spring supplies, and if mailable at all, obtain it in one place as well as another. A peck of choice seed wheat, for example, can be put in 4 pound parcels and carried anywhere within the United States for 32 cents a parcel.

The Catalogues.—On page 113 will be found a long list of catalogues of dealers, and another is given on page 8 of January last. These two lists should be studied by all about to purchase implements, seeds, trees, plants, etc., and one can not go amiss in ordering from any of the dealers there named, as we do not notice establishments that are not in our opinion trustworthy. We are often asked by letter to say which is the best nursery, seedsman, etc.; this we can not do. In former years we have given a brief description of each catalogue, but we have not space for that now. It is well to remember that the nurserymen try to keep all the regular kinds of fruit and other trees, and seedsmen all the well tested kinds of seeds. In novelties each has his specialties.

"Large and Respectable."—A newspaper having printed that on a certain occasion "there was a large and respectable meeting, etc.," the reporter was called to account by the statement that there was only one other person besides himself present. But he insisted that his report was literally true, for, said he, "I was large and the other man was respectable."

Advertising for Advertising.—The business of advertising agents is a comparatively new one. Messrs. Geo. P. Rowell & Co., have built up an immense business as advertising agents, by doing what they advise others to do. They advertise largely that they will advertise of others, and great is their reward.

"Where to Buy Things."—The hundred thousand or more letters annually coming to this office, contain almost numberless inquiries as to where this, that, and the other thing can be procured from trustworthy dealers. We try to answer many of these questions just as if they came from relatives, for we aim to treat all our readers as personal friends. But the hours of a whole year are too few and too short for us to correspond with a tithe of them individually. Much of this correspondence can be saved if our readers, before writing, will look through the pages allotted to business or advertisements. There hundreds of dealers in a great variety of articles tell what they have to part with, and generally give prices and terms, or offer circulars or catalogues giving particulars. From the care exercised in admitting advertisers (not half of those wishing to use these columns can get in at any price, because unworthy), we believe that, as a whole, no superior or more trustworthy class of dealers were ever found together. Those in charge of that department are positively directed to admit no advertiser to whom they would not themselves send an order with cash in advance. As previously stated, we think it will pay every reader to look all through the advertisements in every number. One can hardly do so without getting some suggestion or business hint that will be directly or indirectly useful. When ordering of any of our advertisers, or sending to them for information or circulars, catalogues, etc., let them know that you belong to the great *American Agriculturist* family of readers, and you may expect, and will receive, good treatment. If you don't, please let us know it.

Post-Office Statistics.—A statement from the Post-Office authorities at Washington, gives the amount of mail matter of all classes, sent from 50 of the largest cities, for a period of four weeks, commencing Dec. 1st, 1874. From this we learn that while New York sends by far the largest number of pounds of mail matter, amounting to 1,639,753 lbs., Washington is greatly ahead in the amount of books and seeds sent through the mails. Of books Washington sends 71,075 lbs., against 35,349 lbs. from New York. Of seeds Washington sends 23,040 lbs., while New York sends only 814 lbs. New York sends 3,770,175 letters, this number being much larger than that of any other city; Philadelphia ranks second, and Boston third. Of newspaper packages New York sends 242,311 pounds, this amount being nearly 15 times as large as St. Louis, which in this respect ranks next to New York; the grand total in number of pieces sent from the 50 cities named, is 41,241,990, which weighed 4,543,048 lbs. The government seed shop and book publishing establishment tell upon the mails.

"Fumigation."—All articles, especially where other persons are mentioned by name, should have full address—not necessarily for publication.

Carr & Hobson.—This firm has been strengthened by the addition of Mr. Geo. S. Parsons, who has had a long business experience. The firm will continue in the agricultural implement business under the old name, and at the old place, 56 Beekman St.

Hoosac Thornless Blackberry.—We can not reply to inquiries in regard to this from our own experience. Our plants are not old enough to bear. The canes are smooth, though there are a few small prickles on the under side of the leaf-stalks, but no proper thorns. The variety was discovered near the Hoosac Mt., Mass., by Mr. Frank Ford, who took it home to Ravenna, Ohio, where he has since fruited and propagated it. We have not seen the fruit, but several of the Western papers speak highly of its quality, and Samuel Miller, and Col. Harris, both well known to the horticultural community, are quoted in commendation. Mr. Ford claims it is superior to the varieties usually cultivated. In view of the lack of thorns, most persons would be content with a little less excellence in the fruit; but if this combines superior fruit with unarmed stems, it can not fail to become popular.

Subsoil Plow and Pronged Hoe.—The subsoil plow commended in Mr. Henderson's article, is made by R. H. Allen & Co., of this city, and sold by the dealers generally.... "L. T.," Hexamer's Pronged Hoe, is also made by Allen & Co., and is one of the most useful implements ever devised.

Chesapeake and Ohio Railroad.—We have always had strong faith in this through line between the great West and the Seaboard, and we hold some of its bonds bought for cash at full prices. When the "panic" put it in temporary embarrassment we promptly acceded to the proposals which looked to bridging over the immediate difficulty, and opening the way to its future prosperity, convinced then, as we now are, that that would in the end be the best for all parties concerned, and we hope all who hold the securities of the road will speedily embrace the proposition so that there shall be no delay in carrying out the enterprise. Those interested should send to Messrs. Fisk & Hatch and get the annual report issued February 1st, showing what the road is doing and its future prospects.

"Several Preachers."—The latest reports give the number of Wesleyan, or Methodist Preachers throughout the world as 23,514; and the number of Methodist communicants at 3,692,768, not including several hundred thousand "probationary members." Place the ministers one mile apart in a row, and the line would nearly encircle the earth. If the regular members were placed in the same way, they would be only 35 feet, or a little more than two rods apart. An "Amen," or "Hallelujah," could therefore be readily "passed along the line" clear round the world!

Fearful Mortality.—A Sunday School Journal, having some 75,000 circulation, announced in Dec., that "All our Subscribers will expire Jan. 1, 1875."

A Remarkable Statement is that made by the N. Y. Mutual Life Insurance Co. It speaks for itself upon another column, and all interested in Life Insurance are advised to look over its figures.

SUNDRY HUMBUGS.—Within the limits allowed to the Humbugs, we have not much space for the discussion of general principles, or to argue points in morals. We assume that all gambling, in the form of lotteries or any other shape, is wrong, and the great majority of thinking people agree with us. Now and then one disputes this position, and asserts that a lottery fairly conducted, is not gambling, and that one who buys a ticket takes his chances of getting back nothing, or receiving more than he paid, and that as he does this knowingly, there is no harm in it. Let us suppose, what is very rarely the case, that a lottery is conducted fairly, we still find it a pernicious affair. To illustrate: If ten men put in a dollar each, and agree that one of them who draws a white bean, that has been placed in a box with nine black ones, shall have the whole $10, it would be in the view of these persons, a fair arrangement, and as a lottery, vastly more upright and above board than any lotteries are, and some persons would say that as all went into it understanding the terms, no wrong was done. We look beyond the thing itself, to its influences. We will suppose that these ten men are laborers, or men whose work brings them $1 a day. Nine of them have received nothing in return, while the tenth man has gained $9 and done nothing for it; he has not done a stroke of work, exercised a particle of skill, or done anything that the rest have not, to entitle him to the $10, but blind chance or luck has put them into his hands. The dollar that each put into the game, was needed at home, the family of each unlucky one suffers on account of its loss; the losers, half ashamed and half angry, are determined at the very next opportunity to try it again, and get their lost money back with interest, while the winner, having easily made, without effort, what he would have had to work nine days for, is not at all inclined to go to work, he has found an easier method of getting money; he will take a day or two for himself, perhaps console the unlucky ones by "treating" them, and be on the lookout for another chance. Does any one with a fair knowledge of human character, fail to see that the effects of this simple and honestly conducted lottery, must be altogether bad, demoralizing to those taking a part in it, and a source of discomfort to their families. The loss of the money is the least important, but the passions aroused, the whole effect upon these men can not be other than to make them less valuable members of the community. We have supposed a very simple lottery, with trifling sums at stake, but increase the ten dollars to hundreds or thousands, as in the large lotteries, the evil effects upon those who engage in them, and consequent injury to the community in which they are tolerated, will be correspondingly increased. In the assumed case of the ten men, the whole affair was managed by themselves, and all the money put in was paid out to the lucky man. Let us suppose that another, an eleventh man, proposes the game or lottery to the ten, each of whom puts in his dollar as before, but the lucky one is to have only $5, the eleventh man keeping $5 for his trouble of receiving the dollars, providing the beans, and paying out the $5 to the lucky one who draws the white bean. The result in this case will be that nine men will lose $1 each, one man gains $4 without having done anything to earn it, and another man gets $5 for doing no useful work, but a really harmful one in inducing the others to engage in the game. It is not the least of the bad features of the lottery in all its forms, that it allows a few men who produce nothing, and who instead of promoting industry by legitimate business, carry unhappiness to hundreds of homes; to grow rich at the expense of the industrious. Looking at it in all its bearings, we regard the lottery as pernicious in its effects to those few who draw prizes, as well as to the many who draw blanks; and we include in this all the forms and disguises of the lottery, whether called gift concerts, distributions, or what not, and no matter what charitable, or in itself worthy, object is used to cloak its ugly shape. Indeed, we regard the open and declared lottery more respectable than the scheme that skulks behind some other name, and pretends to be working for a charity, while its whole end and aim is to make money for the managers. But few greater misfortunes can befall a young man just starting in life, than

to draw a prize in a lottery. Almost every one who can remember the times when lotteries were not only tolerated, but legal, can recall cases in which men were absolutely ruined by drawing a prize in one of them. The gain of a few thousands in this manner, unfitted them for all useful business ever after, and they ruined themselves in endeavoring to repeat their former luck. Those who do not regard lotteries as gambling, and hold them to be fair investments, do not make very wise distinctions in morals, and they are in a very small minority; the better thought of the community, as expressed in the laws of almost every State, is against them....The extent to which this lottery evil extends, is not generally known, and the unhappiness it causes wives, mothers, and children, who see those they love carried away with the passion for this form of gambling, is most saddening. We every now and then receive

MOST PATHETIC APPEALS

from those whose homes are being ruined, asking what can be done to arrest the destructive influence of the lottery. Some of these letters are so touching, that they would almost reach the heart of a lottery manager. Alas, what can we do to help them! Those addicted to this form of gambling, will resort to every device and subterfuge to gratify their passions. In the majority of cases, they procure their tickets from a distance by mail. We have had complaints that tickets were sold in New York, and we have been asked to try and stop their sale, but the authorities say that they can do nothing unless a formal complaint, with proofs, is presented to them, which the parties who write us are unable to furnish. If one is infatuated by this or any other form of gambling, he will find means of indulging in it, and there is no large city in which lottery tickets are not sold.... Another frequent source of domestic misery, is

PRIVATE BANKING HOUSES.

That some of these are of the highest character, undeniably safe, and a benefit to the community in which they are placed, we have no doubt, but there are others quite the reverse of these, and are nothing less than swindles. Every now and then a man, whose reputed wealth gains him the confidence of his employees and others, by means of a bank gets possession of a large sum, made up of the "little all" of hundreds of hard-working people, A crash comes, and misery follows to all concerned, except to the banker, who we have more than once noticed continues to live in the same style, and drive in as fine a turnout as before. Cases of this kind have occurred within our own knowledge, and they happen all over the country every year. The sufferers are only poor work-people, whose little deposits of $5 to $100 are not large enough to make a noise in the financial world. A case which recently occurred in New York State is thus described by one of our old subscribers: "The rural population of this county, and the hard-working men and women of —— and neighboring villages, have been victimized a short time since to the amount of about three quarters of a million of dollars by the failure of the two private banks. These two cases, and a similar one which occurred at —— a few years ago, are considered here as premeditated swindles. Hundreds of people of small means, enticed by the highest rate of interest paid by these private banks on deposits, invest in them, and take a simple note of hand (Deposit Certificate) of the private banker, and that is all they have as security for their hard earned dollars. Thus, with a capital of say $25,000, the private banker receives in some cases *one half a million of dollars*. It is not strange if, with these funds in his possession, upon which he pays a full legal rate of interest, he should be tempted to dabble in Wall Street, or in some wild cat scheme, to make money, or fail to secure to himself by some sharp practice a good share of the deposits, as was the case here." —Too much caution can not be exercised by those who have earnings to deposit. A regularly incorporated savings bank is safer than any private bank can be, and though losses sometimes arise from these, it is very rare, and they are probably as safe as anything that can be devised. The offer by a private bank to pay a higher rate of interest than that given by the savings banks, should put people on their guard. "Slow and safe" is the best rule in such matters....These so-called

PUBLISHING COMPANIES

are getting to be a nuisance. They spring up in all sorts of obscure towns in various parts of the country, but the New England States seem to be the most infested. The circulars of these "companies" are as near alike as a lot of beans. We have before us the circular of one that calls itself "Union," and it presents a union of nastiness and balderdash absolutely disgusting. These circulars offer various things, from false whiskers to false playing cards, but their end and aim is to advertise "Marriage Guides," "Hidden Secrets of the Egyptians," "Lovers' Own Library," etc., which are set forth in the circulars in a manner likely to tempt young people into buying them, and if the books are as bad as the circulars would lead one to infer, the sellers of them should be set to hammering stones in the penitentiary. The trouble with these miserable things is that we can not expose them as they deserve, without doing that which of all other things these companies would delight to have us do—advertise them....Among the humbugs especially designed to

CHEAT FARMERS

is the "Golden Butter Compound," which every now and then turns up; this time it is being run by some chaps in Marion, Ohio. This stuff proposes to make butter at a cost of four (4) cents a pound, and of a quality which can not be distinguished from "cream butter." The compound is sold in boxes to agents at 50 cts. a box, and is to be sold by them to the farmer at $1. Now, a farmer of average shrewdness and hard sense will say, "This fellow says butter can be made for four cents a pound; I get 20, 30, and sometimes 40 cents a pound for my butter; why don't he make butter and control the market, and not be howling and screaming through his circulars for agents to buy his stuff and sell it all over the country? This butter compound man doesn't seem to me to have much confidence in this stuff himself, for if he can make butter at that price, he can be a millionaire at once." And the shrewd farmer would be right. We need only add that the concern which makes this butter compound is also engaged in selling "The Oil Purifyer and Lamp-chimney Protector."

MEDICAL MATTERS

seem to be very quiet, and our budget is mainly a repetition of the old stories. A Missouri friend sends us the consumption circular of Daniel Adee, and asks us to give the concern "a call." We thought we had said sufficient of Daniel last year. It is the old dodge over again. A gentleman's son was in the last stages of consumption; he was of course "given up to die by the most eminent physicians," but a "remedy" saved the son's life, and now said "gentleman" will "gladly make known the same," and those who send their address to D. A. can get the "recipe" all for nothing. We did not have the consumption, but not knowing how soon we might have it, sent last summer to D. A. for the recipe, as it must be a handy thing in the house. Easy enough to cure the consumption now, just take some of the "Indian Cough Plant," steep it, and drink thereof, and the consumption will "git up and git." There is a slight difficulty in the way. The "Indian Cough Plant" is only to be had among the Indians, and for the benefit of suffering mortals Daniel A. will furnish the same, all fixed up, for $2 a bottle. Our new readers may not be aware of the ways of these benevolent people, who offer to send recipes free, and this will serve as a sample of a large lot. It all means money.

What to Plant.—See the notes about work, under Orchard, Fruit, and Kitchen Garden, where carefully considered lists of the best fruits and vegetables are given. These notes always embody replies to many queries, and this month they are unusually full.

Bone and Blood Spavin.—"Enquirer," Taunton, Mass. A spavin of long standing is rarely cured, being generally either constitutional, or resulting in a permanent alteration of the parts. Bog or blood spavin, may appear on both sides of the joint, or the lower part of the limb, in which case it is called thoroughpin. When it appears below the hock, it is sometimes mistaken for windgalls. These soft spavins do not always cause lameness, but a bone spavin nearly always does, and it is therefore the worst.

To Remove Warts.—"O. P. K.," Ellsworth, N. Y. Warts upon horses may be removed by the daily application of a solution of nitrate of silver (lunar caustic) to their surface.

The Best Feed Cutter.—"Would you buy a Gale's Copper Strip Cutter, in preference to any other, to be used either by hand or horse-power?"—For cutting by hand, we know of no other machine that works so easily, or cuts so rapidly as Gale's Copper Strip Cutter. But for horse-power there are machines that can be fed more easily and speedily—and this is an important point. Those who have a large horse-power, should get a six or eight horse-power feed cutter, and go round amongst the farmers to cut fodder, as they now do to thrash grain. The feed cutter should have an elevator attached, for carrying the cut fodder where it is wanted. Where the buildings are convenient for storing the cut feed, most farmers will find it cheaper to hire such a machine, than to do the work themselves.

Short-horn Statistics.—The National Association of Short-horn Breeders, which recently met at Springfield, Ill., having entrusted Alex. Charles, Cedar Rapids, Iowa, with the work of procuring complete statistics of all Short-horns now living in the United States and Canada, for publication in the report of their proceedings, we would urge upon every one of our readers who are breeding Short-horns, either upon a large or small scale, to send in prompt and careful returns, and those who have not received blanks for that purpose, will be furnished them free of charge promptly, on application to Mr. Charles. Short-horn men will please give this their very earliest attention, for by so doing the forthcoming report of the American Association of Breeders will be made the most valuable and interesting publication ever issued in this country.

Artificial Hatching of Eggs.—"J. R. C.," Huron, Iowa. The process of hatching eggs packed in sand in a tin-bottomed box heated by steam from a boiler, would be a very risky one. The eggs would become cooked at the outset without much doubt. The heat required to hatch eggs is 102 to 104 degrees. A higher temperature would kill the embryo. It would occupy more space than we could spare to describe the methods of incubating eggs and caring for the chicks. You had better get a copy of Wright's Practical Poultry Keeper, price $2.00.

Diseases in Hogs.—"J. F.," Madison, Ind. Want of water, insufficient shelter from the heat, and indigestible food, are frequent causes of diseases amongst hogs in the summer and fall. The diseases thus produced chiefly act upon the blood, inducing fevers mainly of a typhoid kind, and inflammations or congestions of the vital organs. The disease known as cholera is one of the most conspicuous of these, but that is simply one of the particular manifestations of the general disorder. It is rarely of use to try to cure any cases. The attack is too sudden and violent for medicine to avail. The remedy lies in prevention. When well cared for, the hog is one of the hardiest of animals, and good care means nutritious food, plenty of pure water, shelter from the burning sun, clean, dry pens when they are confined, and a regular allowance of salt.

Bran or Oats for Cattle.—"C. A. J.," Hudson, Mich., asks if it is better to sell oats at 45 cents a bushel, ($28.12 per ton), and buy bran at $16 per ton, or feed the oats ground to cows and young cattle?"—So far as nutriment is concerned, we think the oats the cheaper food. But the manure from a ton of bran, is worth twice as much as from a ton of oats, (see table in "Harris on the Pig," page 129). So that at the above rates the same amount of money spent in bran, would give manure worth nearly four times as much as from oats.

Catarrh in a Cow.—"O. D. S.," Delaware Co., N. Y. The symptoms of catarrh are a stoppage of the nasal passages, and the discharge of mucus from the nose, with considerable fever and debility in severe cases. Where the attack is a light one, bran mashes given slightly warm, and a little careful nursing are all that are needed to effect a cure. Where there is fever, and redness in the eyes, and weeping, daily doses of 2 ounces of sulphate of potash dissolved in a pint of water, may be given until the fever disappears. This disease is the result of exposure to cold or damp.

Barley.—"J. D. B." asks, "Which is the most profitable variety of barley, two, four, or six-rowed?"—There is no such thing as *four*-rowed barley. When "four-rowed" barley is spoken of, six-rowed is meant. The two-rowed is a later and heavier variety than the six-rowed. All the choice malting varieties of barley in England are two-rowed, and they command a much higher price than the six-rowed kinds. Here the six-rowed barley brings about 10 cents a bushel more than the two-rowed—and we think it is the most profitable kind to grow. But much depends on the soil and climate. Six-rowed barley ripens in this State the same time as winter wheat, while two-rowed does not ripen until we are through cutting wheat, and some farmers prefer it on this account. It also yields more straw than the six-rowed.

Irritation of the Tail.—"F. R.," Jamestown, Va. When a horse rubs his tail until the hair is worn off, it would be well to apply kerosene oil to the part, after washing it with warm water and soap. It may be simply irritation of the skin, which this will cure. If worms are the cause, an injection of a pint of salt water should be given daily for a few days, or a pint of linseed oil might be used instead of the salt and water, with an ounce of turpentine mixed with it.

Spaying Fluid.—"J. B. M.," Medina Co., Texas. The advertisement is all we know about this proposed method of spaying sows and cows. The thing looks suspicious, but we cannot give an opinion without knowing more about it.

Basket Items continued on page 113.

The Remington Factories.

The modern town of Ilion—as famed for feats of arms in one sense as the ancient one—is situated in the lovely Mohawk Valley in Herkimer Co., N.Y., upon the N. Y. Central railroad. It owes its existence, if not its origin, to the enterprise of E. Remington and Sons, who have there erected several extensive factories, in which they employ 1500 mechanics, for the manufacture of their celebrated rifles, shot guns, pistols, sewing machines, plows, mowers, tedders, hoes and other agricultural implements. This strange mixture of implements of war and peace bring to mind the ancient prophecy which relates to turning swords into plow shares, etc., for in the Remington factories it is highly probable that the same bar of steel may furnish material for an army rifle, a bayonet, a plow share, a hoe, or a sewing machine shuttle or needle. To enumerate what a visitor may see in this four-acre field of workshops is impossible here, but one thing we cannot fail to remark is, that for perfection of machinery, excellence of material, skill in workmanship and ability in execution, this establishment is

Fig. 1.

Fig. 3.

Fig. 4.—ONION HOE.

unsurpassed. It results that the same material and skill, which enabled this firm to produce the rifle which won the first prize at the late trial between the first marksmen and the best rifle makers in the world, is also brought to bear upon making a sewing machine, a hoe or a plow. To make a first class gun or rifle needs the very best material, the most accurate machinery, and the most consummate skill. It is the highest recommendation that we can give to the Remington sewing machine, or to

Fig. 2.

the various agricultural implements, that they are manufactured of the same quality of material, in the same shops, and by the same kind of artisans as their most accurate rifles and guns. Of their rifles and double barrelled guns, all breech loaders, we need only say that a sportsman cannot resist a desire to possess one of them as soon as he is permitted to handle it, and that it takes but a small sum of money to procure it. For $60 may be purchased double barrelled guns which shoot equally well with $300 imported guns. The *Agriculturist* frequently receives letters from western subscribers who use the Remington rifles for hunting buffalo and antelope, and who speak highly of it. One wrote recently of having shot 28 buffaloes with one of them in one day from one stand.

Fig. 5.—ONE-HORSE STEEL PLOW.

But it is of the sewing machines and farm implements we would speak more particularly. Of the sewing machines, it is enough to say that they are manufactured in the Armory, and the same skill and care is given to them to insure the highest excellence as is given to the arms. The special agricultural implements made at Ilion are hoes, rakes, steel plows, mowers, tedders, excavators, cotton gins, cultivators, and also iron bridges. The manufacture of hoes and rakes is something that few who use these tools know anything about. Few farmers would recognise in the illustrations here given a hoe and a garden rake in their infancy, but this is as they appear after they part company with the parent bar of steel. Fig. 1 is the hoe. This shapeless piece of steel is heated and passed between a pair of rollers, when it appears as seen in fig. 3. Another passage between the rollers brings it nearer to its proper shape, when it is clipped, ground, polished, and then appears the bright attractive implement that is so well known. The onion hoe made at Ilion, fig. 4, is an excellent tool for the garden, weeding both sides of the row at one stroke. The infant rake is seen at fig. 2, as it is clipped from a bar of steel. It is heated in a small furnace, rolled, pressed, hammered, bent, twisted and tortured into all manner of contortions, until it is brought to a shape which pleases the critical eye of the smoky artisan, when it is ground and polished as bright as its brother, the hoe. It is then a steel garden rake needing only its handle to be ready for use. To complete a hoe or rake the services of 40 different workmen are required. The Mohawk Valley plows are all made with "cast cast-steel" shares, and even in the sticky soil of that fertile bottom land scour perfectly. This plow is shown at fig. 5. A one horse steel-plow, No. C 10½, is one of the best and handiest plows we have seen, and is especially adapted for use in market gardens, vineyards, hop gardens, and light work upon farms. The Ilion iron beam clipper is a splendid plow. The American Needle cotton gin, fig. 6, is also made by the Remington Company. This has some improvements upon the ordinary gins, which make it very desirable for planters' use. An earth excavator which digs, lifts and removes earth at less than half the usual cost, is also one of the Remington Company's specialties as are arch and trapezoidal truss iron bridges. With so large an establishment there are abundant facilities for doing all this work, and much more that we have not space to mention, in the very best manner. After a most interesting inspection of the works at Ilion, we can readily understand why the Remington Company's productions have gained so great a popularity; indeed it would be strange were it otherwise, with the ample facilities they possess, and the skill in execution apparent every where about their factories.

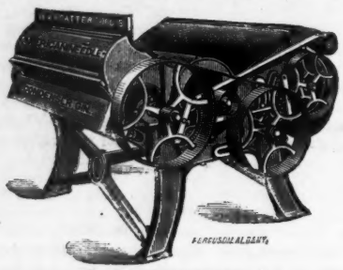


Fig. 6.—COTTON GIN.

REMEDY FOR RATS.—The rat is a cleanly animal, and loves a sleek coat. If coal tar is applied about the entrance to a rat's burrow, so that the animal's coat will be smeared with it, he will leave in disgust. At least the rats of Burlington, Vt., thus express their dislike to a tarry coat, and tarry no longer.

A House Costing $1,500 to $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N.Y.

Twenty years' experience in planning and building has taught me that it is not difficult to design either as to Style, Room, or Cost, when the owners have means sufficient to gratify their individual tastes, and no special care is required to save expense. But it is quite another matter to provide plans for the great mass of people, who, through habit or necessity, put everything to the test of economy, and to whom every inch of room, or foot of material, is an important consideration. In designing and projecting such work, theories avail little; practical experience must then be the chief guide.....Conventional modes of living have established a system of household arrangement and economy requiring for every home of even moderate refinement, a house with a Front Hall, a Parlor, a Dining-Room, and a Kitchen on the first floor, and a liberal suite of chambers in a second story. Our plan herewith, though only 20 by 30 feet, provides for all the above. If built on an ordinary 25-feet village lot, it will allow a needed passage-way on one side. In rapidly filling up, crowded localities, four persons owning single lots, making a frontage of 100 feet, can arrange together and build five houses on this plan for about the cost of erecting four detached houses. The fifth house may be rented or sold for the benefit of the four owners.

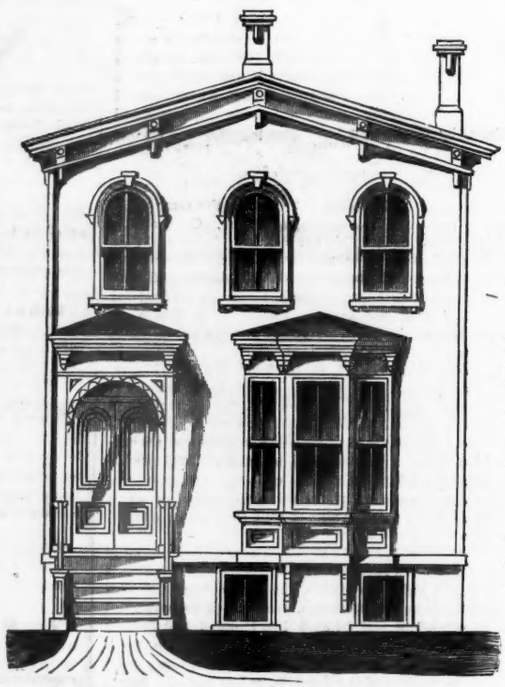


Fig. 1.—FRONT ELEVATION OF HOUSE.

In such cases, a hall should be finished in the basement with an entrance in front similar to the one shown in the rear in fig. 2.

The **Front Elevation** is made up of simple parts, in a neat arrangement. The Bay Window indicates refinement, and adds largely to the area or room of the Parlor....The **Cellar** walls are of hard brick, are 8 inches thick, 7 feet high, and show at least 3 feet above ground. For health's sake alone, as well as for a better appearance, and for convenience if the basement should ever be desired finished off in rooms, which can be done at any time with little expense, it is best to always place the first floor well up from the ground. In very cold localities frost can be kept out of the basement by banking up in winter, or better by laying the brick walls with an opening up through the center, extending bricks across the opening at frequent intervals to secure firmness. This central air chamber promotes health, warmth, and dryness

in the basement or cellar. One foot of the soil taken from the excavation for the cellar should be used in grading around the house, to secure the

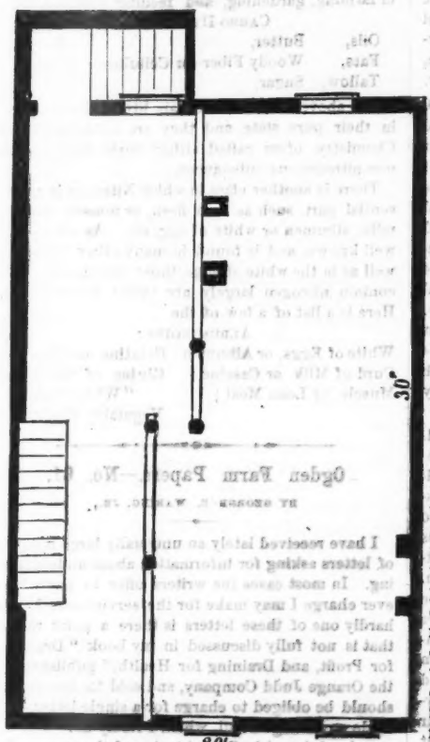


Fig. 2.—PLAN OF CELLAR.

flow of water *away* from it, and still leave the walls 3 feet or more above the ground.

Cost.—The following *Estimates* of cost in detail,

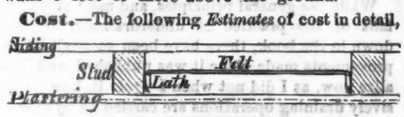


Fig. 6.—SECTION OF OUTSIDE WALL.

will give an idea of the general character of the work. The prices given are for materials in the vicinity of New York. Carpenters wages are reckoned at $3 per day; mason's work, $3.50 per day; and painters, $4 per day:

Excavation, 2½ feet deep, @ 25c. per yard	$ 18.75
12,000 Hard Brick, @ $15, furnished and laid	180.00
28 feet Stone Steps, @ 40c.. per foot	11.20
16 feet Stone Sills, @ 30c. per foot	4.80
483 yards Lath and Plastering, @ 40c	193.20
2000 feet Timber, @ 2½c. per foot	50.00
viz. 2 Sills, 4x7 in. x20 feet. 2 Ties, 4x6 in. x20 feet. 2 Sills, 4x7 in. x30 feet. 2 Ties, 4x6 in. x30 feet. 4 Posts, 4x7 in. x20 feet. 2 Girders, 4x8 in. x15 ft. 2 Plates, 4x6 in. x 20 feet. 2 Stringers, 3x8 in. x20 ft. 2 Plates, 4x6 in. x 30 feet. 30 Beams, 3x8 in. x20 feet.	
32 Rafters, 3x4 inches x12 feet, @ 20c	6.40
300 Wall Strips, 2x4 inches x13 feet, @ 16c	48.00
200 Novelty Siding Boards, 9½ inches, @ 38c	76.00
160 pounds Tarred Paper, @ 5c	8.00
100 Hemlock Boards, 10 in., @ 20c	20.00
100 feet Main Cornice, @ 50c	50.00
1 Bay Window Complete, with Blinds (labor included)	75.00
1½ Stoops Complete, (labor included)	70.00
8 Windows with Blinds, @ $18	144.00
4 Windows with Blinds, @ $8	32.00
8½ Squares of Tin Roofing, @ $9	76.50
100 feet Gutters and Leaders, @ 10c	10.00
150 Flooring Plank, tongued and grooved, @35c	52.50
Stairs, (Main and Cellar)	80.00
Base-Boards, Shelving, etc	30.00
4 Mantels (1 full marble, and 3 marble shelves on Trusses of Plaster)	50.00
21 Doors Complete, (labor included)	200.00
350 lbs. Nails, @ 5c	17.50
Painting, two coats	80.00
Carpenter's Labor, not included in windows, doors, and porches, about	250.00
Cartage, average one mile	30.00
Allow for extras, Cistern, Pump, Sink, etc. etc	141.15
Total Cost	$2,000.00

Prices vary in different localities, somewhat, but when higher in some particulars they will generally be lower in others, so that the whole cost will not be greatly different over a considerable extent of country. There are many items that can be cut down in the above estimate, where great economy is needful—our estimate is for a pretty complete, tasteful house. For example, substitute wood for stone steps and sills; omit the blinds, and bay window, use cheaper doors, pine stair-railing and newel instead of walnut, etc. Any good builder can construct a house of this size, number of rooms, and general conveniences, for $1,500 to $1,600, the smaller sum where bricks, lumber, and labor are obtainable at moderate prices. The Bay Window and general external appearance of the front are very desirable. A movable "Dresser" having drawers and shelving with small doors, is indicated for the dining room. This room may be heated by leading a pipe from the kitchen stove to a drum and back into the chimney, or up through the chamber above to warm that somewhat. A "Fireplace heater" in the parlor will warm the chamber above.

An end section of the "Novelty Siding" is shown in fig. 5. This is of 10-inch boards, 1 inch thick, cut as shown in the engraving. The groove in the centre gives it the appearance of narrow clapboards; the lap of about an inch closes tightly, and the thick boards not only add to the warmth, but also to the strength. A house covered with this will vibrate very little in the most windy situations, and be firmer than one covered with thin siding having much heavier timber. Where planing mills are accessible, it is little more expensive than the dressed half-inch boarding, and the appearance is quite as pretty. In this vicinity it is customary to purchase a lot of pretty good quality merchantable pine boards, select the best and clearest of knots for siding, and use the rest for flooring where knots are not objectionable when to be covered with carpeting. The smaller and firm knots in the siding used are readily covered with paint if first primed with a little solution of shellac in alcohol.

EDITORIAL NOTES.

Mr. Reed provides in his estimate for "160 lbs. Tarred Paper." We suppose he intends this to be applied as sheathing upon the studding, before putting on the siding, as this is the usual custom. We suggest the plan devised by MR. JUDD, (our senior Publisher), and described in the *American Agriculturist* for March, 1871, pages 88 and 89. A section of the wall is shown in fig. 6. The studding 2 x 4, makes a space of 4 inches between the siding and

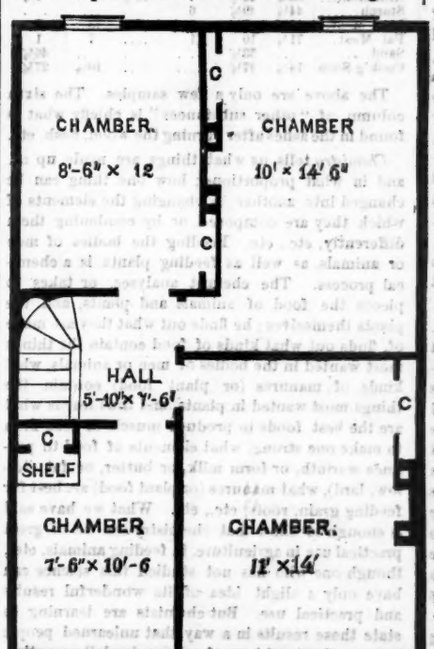


Fig. 4.—PLAN OF SECOND STORY.

plastering. Tarred paper, or what is termed roofing felt, is procured in rolls 32 inches wide. A saw run through the roll cuts it into 16 inch strips. The studs being set 16 inches apart from

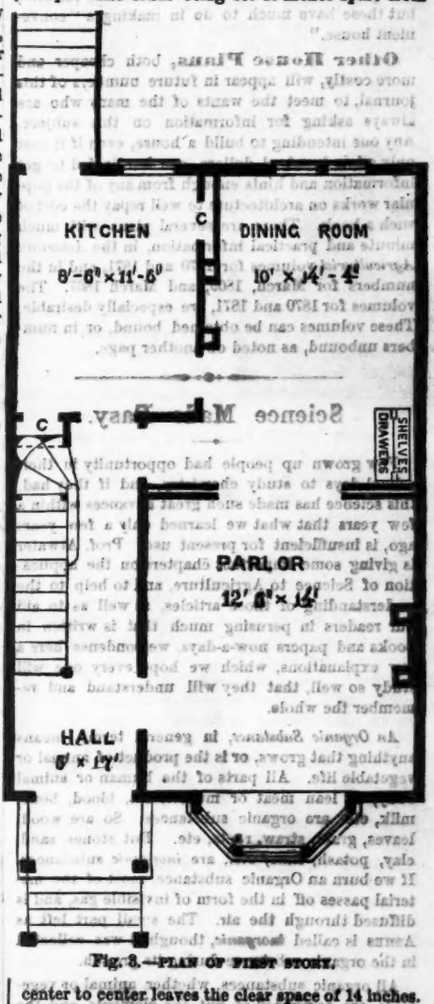


Fig. 3.—PLAN OF FIRST STORY.

center to center leaves the clear space of 14 inches. The strips of felt are turned up an inch on each edge, and these turned edges are held against the studs by lath firmly nailed up and down, so as to hold the sheets midway between the plastering and siding. This leaves *two* air chambers, both good non-conductors of heat. Mice or insects will not eat or go through this material. It is impervious to currents of air, and the whole is as warm as if filled in with brick. The cost is very small, and, as will be readily seen, it is much warmer than when the felt is put on directly under the boards, leaving only one air chamber, and that a wide one.... In all house-plans we advise putting in all the closets possible; they are always convenient, even a foot square "cubby-hole" in the side of a chimney is a handy place. In planning a house, after making the size as large as one's means will allow, the "better half" should be consulted as to the advisibility of making this or that room a little smaller by cutting off a few inches here and there to enlarge a pantry or closet.... We always advise to put in an extra bell or two, and one or more speaking tubes, to connect the upper and lower rooms. The cost is but trifling if they are put in when building. A hundred feet of speaking tube will cost but $2 or $3; the carpenter can insert it behind the lath, running it from one room to another in a few minutes, and it will save many steps, and much calling through the halls, especially when the mother happens to be an invalid and restrained to a chamber. ....In arranging sink, table, dish pantry, etc., with reference to dining-room and kitchen, always plan to save steps. A distance of 10 feet extra, travelled over each way, say 20 times a day, in handling

Fig. 5.—

food and dishes, amounts to 28 miles extra walking every year, all of which may be saved by a slight change in arrangement. These are small matters, but these have much to do in making a "convenient house."

Other House Plans, both cheaper and more costly, will appear in future numbers of this journal, to meet the wants of the many who are always asking for information on this subject. Any one intending to build a house, even if it cost only a few hundred dollars, can hardly fail to get information and hints enough from any of the popular works on architecture to well repay the cost of such a book. There are several plans, with much minute and practical information, in the *American Agriculturist* volumes for 1870 and 1871, and in the numbers for March, 1869, and March 1867. The volumes for 1870 and 1871, are especially desirable. These volumes can be obtained bound, or in numbers unbound, as noted on another page.

Science Made Easy.

Few grown up people had opportunity in their school-days to study chemistry, and if they had, this science has made such great advances within a few years that what we learned only a few years ago, is insufficient for present use. Prof. Atwater is giving some important chapters on the application of Science to Agriculture, and to help to the understanding of those articles, as well as to aid our readers in perusing much that is written in books and papers now-a-days, we condense here a few explanations, which we hope every one will study so well, that they will understand and remember the whole.

An Organic Substance, in general terms, means anything that grows, or is the product of animal or vegetable life. All parts of the human or animal body, as lean meat or muscle, fat, blood, bone, milk, etc., are organic substances. So are wood, leaves, grain, straw, roots, etc. But stones, sand, clay, potash, lime, etc., are *inorganic* substances. If we burn an Organic substance, most of the material passes off in the form of invisible gas, and is diffused through the air. The small part left as ASHES is called *inorganic*, though it was collected in the organic substance during its growth.

All organic substances, whether animal or vegetable, are composed of but *few* elements, and the great bulk of them are made up of only *four* of these—just as buildings of a thousand kinds and forms are made out of wood, brick, sand, lime, nails, and paint, combined in various ways, and in different proportions. Thus, if we separate into its parts, that is *analyze*, a potato, or some hay, or wheat, or a piece of meat, or cheese, or some blood, or oil, or any one of a thousand other organic substances, we shall find them very largely composed of *four* simple elements, which the chemists call Oxygen, Hydrogen, Nitrogen, and Carbon. (A moment's thought would tell any one that plants, grains, and roots, must have the same composition as flesh, because human or brute animals eat them, and change them into flesh.)

Oxygen, in its natural condition, is an invisible *gas*, (or air-like substance,) but it combines with most other substances, to form solids or liquids. It constitutes 8 lbs. of every 9 lbs. of water. It makes up 2 lbs. in every 10 lbs. of air; 4 lbs. in every 11 lbs. of pure dry clay; 8 lbs. in every 15 lbs. of pure white sand; 1 lb. in every 3 lbs. of dry wood. It is the rapid uniting of the oxygen in the air with the carbon and hydrogen of wood or coal, that gives out the heat in the fire. By a slower process of the same kind in the body, the oxygen of the air drawn into the blood through the lungs, unites with the carbon and hydrogen absorbed into the blood from the food in the stomach and intestines, and gives out heat to the body.

Hydrogen.—This, like oxygen, is in its natural state a gas, which also combines with other elements, and forms solids and liquids. Every 9 lbs. of pure water contains just 8 lbs. of oxygen and 1 lb. of hydrogen, and *nothing else.* Hydrogen forms a part of the composition of many other substances. It is, when alone, the lightest substance known. A barrel full, or 32 gallons of water weighs 266¼ lbs., or 4,264 ounces. If the barrel be filled with air, the air weighs 5¼ ounces; if with oxygen gas, the oxygen weighs 5¼ ounces, while if the barrel were filled with hydrogen, the 32 gallons of hydrogen would weigh only one-third (⅓) of an ounce, or more than twelve thousand times less than water.

Nitrogen is another gas, in its natural state. 100 lbs. of pure air contain 77 lbs. of nitrogen, mixed with 23 lbs. of oxygen; 100 gallons of pure air consists of 79 gallons of nitrogen, and 21 gallons of oxygen. If we change the proportions and unite 14 lbs. of nitrogen with 40 lbs. of oxygen, and add 9 lbs. of water, we have the powerful acid called "*aqua fortis*" (or nitric acid.) Nitrogen is an important substance in the animal and vegetable economy, as it enters into and forms an essential part of nearly all animal and vegetable substances. Without nitrogen we can have no muscle or lean meat, no cheese, no clover, indeed we could have very few of our common articles of food, and with no food containing nitrogen, we should have very little strength.

Carbon.—This is not naturally a gas, but a solid. Pure charcoal is nearly pure carbon, so is the mineral or stone coal we burn. But carbon is not always black. The diamond is pure carbon in a crystaline form. Heat the purest white sugar slowly to drive off the other substances, and you have a mass of black carbon left. White wood burned or heated away from the air, leaves our charcoal or carbon. It was in the white wood before, and only took the black form when we drove off most of the other substances. The so-called black lead of our pencils is graphite, a form of carbon, with a little iron in it. No organic substance is without carbon, and with few exceptions, all contain hydrogen and oxygen also. Now to show how largely the above four elements enter into the things around us, look at the following table:

100 POUNDS OF	CONTAIN ABOUT					
	Carbon,	*Oxygen,*	*Hydrogen,*	*Nitrogen,*	*Water,*	*Other Substances.*
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Pure Water	.....	88⅞	11⅛	.....	.....	.....
Pure Air	.....	23	.....	77	.....	.....
Oats	42½	31½	5½	1.9	14.1	3.5
Peas	40	33⅓	5⅓	3½	14	3½
Wheat	38½	37	5	3	14½	2
Potatoes	11	11	1½	⅝	75	1
Hay	38½	32	4½	1½	15⅓	8
Albumen	53½	23½	7	15½	.....	1½
Starch	44½	49½	6	.....	.....	.....
Lean Meat	12½	8½	1⅜	3½	75	2
Fat Meat	71¼	10	11	.....	7	1
Sand	.....	53⅓	.....	.....	.....	46⅔
Cook'g Soda	14½	47½	.....	.....	10½	27⅓

The above are only a few samples. The sixth column, of "other substances" is chiefly what is found in the ashes after burning the wood, flesh, etc.

Chemistry tells us what things are made up of, and in what proportions; how one thing can be changed into another by changing the elements of which they are composed, or by combining them differently, etc., etc. Feeding the bodies of men or animals, as well as feeding plants, is a chemical process. The chemist analyses, or takes to pieces the food of animals and plants, and the plants themselves; he finds out what they are made of, finds out what kinds of food contain the things most wanted in the bodies of men or animals, what kinds of manures (or plant food) contain the things most wanted in plants, and thus learns what are the best foods to produce muscle or lean flesh to make one strong, what elements of food to produce warmth, or form milk, or butter, or fat (tallow, lard), what manures (or plant food) are best for feeding grain, roots, etc., etc. What we have said is enough to show that chemistry can be of great practical use in agriculture, in feeding animals, etc., though one who has not studied this science can have only a slight idea of its wonderful results and practical use. But chemists are learning to state these results in a way that unlearned people can use the teachings of science in daily practice, to very great advantage.

A few Helpful Explanations: A great number of substances, such as fats (tallow, lard, butter, etc.,) woody fiber, straw, sugar, etc., are mainly made up of Carbon, Hydrogen, and Oxygen described above. These are sometimes, for short, called "*Carbo-Hydrates.*" The principal ones we have to do with in farming, gardening, and feeding animals are:

CARBO-HYDRATES:

Oils, Fats, Tallow, Butter, Woody Fiber (or Cellulose), Sugar, Starch, Gum.

The above substances contain little or no nitrogen in their pure state, and they are in Agricultural Chemistry, often called either *Carbo-Hydrates*, or non-nitrogenous substances.

There is another class in which Nitrogen is an essential part, such as lean flesh, or muscle, curd of milk, albumen or white of egg, etc. As *Albumen* is well known, and is found in many other things as well as in the white of eggs, those substances which contain nitrogen largely are called Albuminoids. Here is a list of a few of the

ALBUMINOIDS:

White of Eggs, or Albumen; Curd of Milk, or Caseine; Muscle, or Lean Meat; Gelatine, or Glue; Gluten of Grain, or "Wheat Gum;" Vegetable Fibrine.

Ogden Farm Papers.—No. 61.

BY GEORGE E. WARING, JR.,

I have received lately an unusually large number of letters asking for information about underdraining. In most cases the writers offer to pay whatever charge I may make for the service asked. In hardly one of these letters is there a point raised that is not fully discussed in my book "Draining for Profit, and Draining for Health," published by the Orange Judd Company, and sold for less than I should be obliged to charge for a single letter, if I made any charge at all, which I rarely do. The increasing interest in the subject, and the apparently widespread ignorance as to the existence of the book in question, must be my excuse for calling attention to it in this way.

While the general principles, and most of the details of the practice of underdraining, are laid down in the book, there have been some slight improvements made since it was published, and I realize now, as I did not when I wrote it, how extensively draining operations are carried on by men so situated that they cannot procure draining tiles at a reasonable cost. This makes it worth while to give some general consideration to the subject here. The most striking, and, I think, the most valuable suggestion that has been made in connection with draining during the past few years, comes from Mr. Wilkinson, of Baltimore, who recommends that where tiles cannot be procured, the conduit be made with gravel. The ditch is to be cut very narrow, especially at the bottom, regularly graded, as if for tiles, and then filled to a depth of from six to ten inches with gravel, covered with shavings or leaves, but only a very little of these, just enough to prevent the earth, during the filling, from rattling down into the gravel. There might be some danger, if the quantity used were large, that on its decomposition, it would work down into the gravel and cause obstructions. After the covering is put on the gravel, the ditch is to be filled, the earth being well packed, as is recommended in tile draining. The gravel may be coarse or fine, but, whatever its quality, it would be better that the finest and the coarsest parts should be screened out, so that that which is used may be of uniform coarseness, and more porous than if all were mixed together. I am disposed to attach very great importance to this method of draining; where gravel can be cheaply obtained, it must be very economical; as there can never be a very rapid current of water passing through the conduit to abrade the sides of the ditch, there will be little danger of silting up; and, as the gravel will lie snugly together, there is no danger of its misplacement, or of the injurious entrance of vermin. The drain would be everywhere open to receive the infiltration of water, and for all lateral drains the arrangement seems very nearly perfect. Doubtless a channel of gravel as-

eraging four inches wide, and six inches deep, would furnish an ample conduit for a drain 1000 ft. long, or for the draining of an acre of land. For the outlet of larger areas, or for laterals aggregating more than 1000 feet, main drains of somewhat larger size, and furnished with broken stones, small cobbles, or better still, with the coarser screenings of the gravel, will ordinarily be found sufficient. It is only when a very large amount of water is to be removed, that any further provision will be necessary. In such a case, either an open ditch, or a drain made of thoroughly well-laid stonework, would be the best where tiles are not available.

One of my questioners says that he can get two-inch tiles at $12 per 1000 ft., and asks whether he should use these, or some cheaper material. The tiles would be the best, and cheaper than anything else but gravel—cheaper even than that unless it is very accessible. He has a fall of two inches to the rod; this is more than ample.

He also wants to carry the slops and waste water from his kitchen to a barnyard seven rods distant; this should be done by the use of pipes not less than four inches in diameter, and well cemented at the joints. There should on the score of health be no opportunity for such leakage as would cause the soil to be saturated with foul water. He further says: "The farm has two ridges and two hollows, through which, in times of freshet, the water runs quite strong. They seldom carry water at other times. Can I get this water underground, so that it will not flood the lower land? It soon settles, but it makes the land work heavy."—In such a case the use of underground drains is not to be recommended. Any occasional rush of surface water had better be carried off through light-sodded water-furrows at the surface; these furrows may be quite shallow and wide, so that a mowing machine will pass through them without difficulty. An unused underdrain, that is, a drain which carries water only a few days in the year, is apt to be a nuisance, and is quite sure to be the resort of mice and other vermin.

I am also asked how steep the sides of a ditch may be made to prevent filling up. This depends very much on the character of the soil, the amount of water running, and the liability to injury by frost. In even a tolerably heavy soil it is not safe to make the slope less than 1½ horizontal to 1 perpendicular; that is, a ditch 3 feet deep, and 1 foot wide at the bottom, should be 10 feet wide at the top; if less than this, it will be quite likely to be frequently obstructed by the caving in of the sides, and will require frequent cleaning out. If the water in the ditch has a rapid flow, it is pretty sure to cut away the banks unless these are protected with stones or planks.

The good opinion hitherto expressed in these papers of the dairy of the Messrs. Boies, at Marengo, Ill., is confirmed by our best butter merchant here. They recently sent me a small package of their butter, which we pronounced to be the best salted butter we had ever seen in winter. At our suggestion the merchant sent for a large package for his own trade, and he considers it unquestionably the best tub butter he has ever had. It finds a ready sale at one-third more than the regular market price.

Now if this sort of thing can be done at Marengo, it may be done at a thousand other places in the West. We receive constant complaints that butter has to be sold at from 15 to 25 cents per pound, because markets where good butter is sought are so distant, but here are men whose markets are a third the continent's width away, and who receive from 40 to 45 cents net at their dairy. The moral of all this is, that people who pay good prices want good articles, and that those who wish to benefit by the high prices they pay, have got to supply the demand in the matter of quality. Nobody at the East, nor at the West either, for that matter, pays high prices from motives of generosity, nor out of sympathy for unfortunate or unsuccessful people; they want good supplies, and for these they are willing to pay a price that will leave a round profit after all the cost of transportation has been paid; and the only way to overcome the difficulty of costly transportation, is to produce things which can be marketed at a relatively low cost for freight. One bushel of corn is as good as another, and there is no great difference in price between beef carcasses of good quality, but good butter and cheese, and well-washed wool, and whatever bears a high price—relatively higher the better the quality—will practically annihilate the distance between the West and the East.

As good a formula as could be given for practical farming at the West, would be *to convert the cheap soil productions of that favored region, into commodities of little bulk and high value, which are in great demand at the East.* Old-fashioned farming can not be carried on at great profit with a thousand miles between the field and the market.

The degree to which Jerseys are working their way among butter-dairymen, is very well indicated by the constantly increasing demand for bull calves. Seven or eight years ago it was considered by a Jersey breeder almost a calamity to have a bull calf born, and it was usually either knocked on the head, or sold at a tender age to the butcher. Now, so active is the demand in every direction, that bulls will probably soon be considered more valuable than heifers. I asked Mr. Crozier, last autumn, a rather high price for a very fine heifer calf, from one of my best cows. He declined to take her, but said that if it had been a bull, he would not have hesitated. Instead of killing or castrating my bull calves, as I did when I began breeding, I now buy all the really good animals I can find within my reach, from good milking strains, and have no difficulty in selling them at fair prices. In one week in January, Mr. Charles Sharpless, of Philadelphia, who owns some remarkable butter-makers, (Jerseys), sold two bull calves only a few weeks old; one to Atherton T. Brown, of Boston, for $300, and one to D. F. Appleton, of Ipswich, Mass., for $500.

The increasing popularity of Jerseys, is due very largely, no doubt, to the influence of the American Jersey Cattle Club, which has established a perfectly reliable standard of pedigrees, and which has been at some pains to extend a knowledge of the characteristics of the breed, but which has avoided an evil complained of with reference to some other organizations, by devoting itself strictly to the general interests of the breed, without in any way working for the particular advantage of its own members, either individually or as a class. Their work has been accompanied with very little flourish of trumpets, but the history of Jersey cattle in America will show, at the end of twenty years, the great value of quiet and well organized effort. Their example might be followed with advantage, not only by breeders of other races of cattle, but by all associations who have for their purpose the furtherance of any agricultural interest, by the avoidance of cheats, and by the spread of information.

Science Applied to Farming.—III.

By Prof. W. O. Atwater, Wesleyan University, *Middletown, Conn.*

How Science is Saving Money and Increasing the Profits of Farming—Practical Directions for Feeding Stock Economically.

In this and succeeding articles we propose to translate for the use of American farmers, some of the results of European experience and experiments upon Manuring and Feeding. We begin with those upon feeding. We have stated that many thousands of German farmers carry a Pocket Calendar, containing, besides other valuable information, a large number of fodder tables. These show in what proportions various food materials should be mixed and fed out to different animals, in order to avoid waste and obtain the greatest amount of flesh, fat, milk, or work, from a given quantity of food. As already remarked, these are no hap-hazard statements, but are the condensed results of the best experience, not merely of ordinary practice, but especially from a great number of feeding trials performed at the Experiment Stations by the ablest scientific men, who have all needful appliances for obtaining definitely the knowledge they seek.

First, however, let us explain a few scientific terms.* Some ingredients of food, and some foods rich in these ingredients, are especially good for fattening animals; others are better adapted to give strength for work, or to supply heat to the body in cold weather. Some promote a large flow of milk; others produce a milk richer in cream or curd.

If a piece of wood, a wisp of hay, or a turnip, is kept some time in a hot oven, a part of it, the water, will pass off. If the dried part be burned, still another portion, called organic substance, will be carried away as invisible gas or smoke, and there will be left only the ashes or mineral matter. Now this organic substance contains the ingredients, which, with water, make the flesh and fat, and milk, and which produce heat and strength. What are these ingredients?

Albumen, found pure in the white of an egg, is a representative of several kinds of substances, which are to be noted as containing nitrogen*, and we apply the general name, **Albuminoids,** to these *nitrogenous*, or nitrogen-containing substances. The "wheat gum," which boys chew, is mainly an albuminoid. In chewing the wheat, the starch, sugar, etc., are removed in the saliva, and the tougher, nitrogenous gluten remains. The Albuminoids are found in the bodies of all animals and plants. Muscle or lean meat, casein (curd) of milk, fibrine of blood, albumen and fibrine of plants, are nitrogenous substances, or albuminoids. Clover, beans, bran, oil-cake, contain much, while potatoes, straw, cornstalks, contain little of albuminoids.

Again, there are other animal and vegetable materials that contain little or no nitrogen, but only carbon, oxygen, and hydrogen.* These are therefore called by the general name of **Carbo-hydrates,** or non-nitrogenous substances. Starch, sugar, woody fiber, oil, tallow, fat meat, and butter, are non-nitrogenous. Potatoes, sugar-beets, straw and chaff, contain much of carbo-hydrates, and little of albuminoids.

Does it not occur to the most unscientific reader, that to produce the most albuminoids, as muscle, casein in cheese, etc., we should select food rich in albuminoids, and that to produce the most fat or butter, or warmth, we should choose the food that contains the most material to yield these products? And further, is it not obvious that the skillful chemist can, by examining the composition of different foods, tell us something as to what these foddering materials are? But we shall learn as the result of the most careful and practical tests, that there are certain combinations of these different materials, the Albuminoids and the Carbo-hydrates, that secure the most profitable results of feeding.

German, English, French, and some American Chemists have examined almost all known food materials, to ascertain just what they are composed of. Here is, for example, what they find

Table 1. *In 100 lbs. of Wheat Grain:*

Water which can be dried out at 212°.....	13 1/3 lbs.
Albuminoids, containing nitrogen.....	13 1/3 lbs.
Carbo-hydrates, (a) containing no nitrogen....	71 1/3 lbs.
Mineral matter (ashes).....	2 1/10 lbs.
	100 lbs.

a This is made up of fat (classed for convenience with the carbo-hydrates) 1 9/10 lbs.; starch 59 1/3 lbs.; sugar 2 9/10 lbs.; gum, etc., 4 7/10 lbs.; fiber, (cellulose,) 3 lbs.

In the Table below, we show the composition of several fodder materials. They are taken in their natural conditions, and the *first* column of figures tells how many pounds of water are contained in 100 lbs. The *third* column tells how much organic matter there is, viz.: that which would burn away. The *second* column tells how many pounds of ashes would be left. Thus we have in 100 lbs. of medium hay 14 2/10 lbs. of water, 79 1/10 lbs. of organic substances, and 6 7/10 lbs. of ashes. There is in this organic part of 79 1/2 lbs., about 30 lbs. of woody fiber. The other 49 1/2 lbs. are composed of 8 7/10 lbs. of *Albuminoids* or nitrogenous substances given in the *fourth* column, and 41 1/10 lbs. of *Carbo-hydrates*

* See also "Science Made Easy," in another column. Ed.

or non-nitrogenous substances given in the *fifth* column. The *sixth* column gives the relative proportions of the Albuminoids to the Carbo-hydrates, which in the meadow hay is about 1 to 5, (or 8.2 to 41.3). These amounts and proportions should be well understood, for they are important in combining these foddering materials to get the best results in feeding for a particular purpose:

TABLE 2.

KINDS OF FODDER. 100 POUNDS CONTAIN.	Water.	Ashes.	Organic Matter.	The organic matter contains as nutritive Ingredients: Albuminoids.	Carbo-hydrates	Ratio of Albuminoids to Carbo-hydrates.
	lbs.	lbs.	lbs.	lbs.	lbs.	
(a)—Hay.						
Meadow Hay, Common	14.3	6.2	79.5	8.2	41.3	1 to 5.
Aftermath of same	14.3	6.5	79.2	9.5	45.7	1 to 4.81
Red Clover, cut in bloom	16.7	6.2	77.1	13.4	29.9	1 to 2.23
Red Clover, cut ripe	16.7	5.6	77.7	9.4	20.3	1 to 2 16
White Clover, cut in bloom	16.7	8.5	77.8	14.9	34.8	1 to 2.30
Timothy Hay	14.3	4.5	81.2	9.7	46.8	1 to 5.
Average of all Grasses	14.3	5.8	79.9	9.5	41.7	1 to 4.40
(b)—Straw.						
Winter Wheat Straw	14.3	5.5	80.2	2.0	30.2	1 to 15.10
Winter Rye Straw	14.3	5.2	82.5	1.5	27.0	1 to 18.
Winter Barley Straw	14.3	5.5	80.3	2.0	29.8	1 to 14.90
Summer Barley Straw	14.3	7.0	78.7	3.0	32.7	1 to 10.90
Oat Straw	14.3	5.0	80.7	2.0	38.2	1 to 15.28
(c)—Green Fodder.						
Grass before bloom	75.0	2.1	22.9	3.0	12.9	1 to 4.30
Grass after bloom	69.0	2.0	29.0	2.5	15.0	1 to 6.
Red Clover in full bloom	75.0	1.7	20.3	3.7	8.6	1 to 2.32
Corn Stalks, end of Aug.	84.3	1.1	14.6	0.9	8.7	1 to 9.67
Cabbages	89.0	1.2	9.8	1.5	6.3	1 to 4.20
Beet Leaves	90.5	1.8	7.7	1.9	4.3	1 to 2.37
(d)—Roots and Tubers.						
Potatoes	75.0	0.9	24.0	2.0	21.0	1 to 10.50
Sugar Beets	81.5	0.8	17.7	1.0	15.4	1 to 15.40
Carrots	85.0	1.0	14.0	1.5	10.8	1 to 7.13
Ruta-Bagas	87.0	1.0	12.0	1.6	9.2	1 to 5.81
Turnips	92.0	0.8	7.2	1.1	5.1	1 to 4.61
Pumpkins	92.5	1.0	6.5	1.3	4.2	1 to 3.25
(e)—Grains and Seeds.						
Winter Wheat	14.4	2.0	83.1	13.0	67.6	1 to 5.20
Wheat Flour	12.6	0.7	86.7	11.8	74.2	1 to 6.28
Winter Rye	14.3	2.0	83.7	11.0	69.2	1 to 6.29
Winter Barley	14.3	2.3	83.4	9.0	65.9	1 to 7.32
Summer Barley	14.3	2.6	83.1	9.5	66.6	1 to 7.
Oats	14.3	3.0	82.7	12.0	60.4	1 to 5.
Indian Corn	14.4	2.1	83.5	10.0	68.0	1 to 6.80
Buckwheat	14.0	2.4	83.6	9.0	59.6	1 to 6.62
Vetches	14.3	2.3	83.4	27.5	49.2	1 to 1.79
Field Beans	14.5	3.5	82.0	25.5	45.0	1 to 1.76
Peas	14.3	2.5	83.2	22.4	51.6	1 to 2.30
Flax Seed	12.3	5.0	82.7	20.5	55.0	1 to 2.68
Rape Seed	11.0	3.9	85.1	19.4	55.4	1 to 2.85
Hemp Seed	12.2	4.2	83.6	16.3	55.2	1 to 3.30
Cotton Seed	8.7	7.8	83.5	22.8	44.7	1 to 1.96
(f)—Refuse.						
Malt Sprouts	8.0	6.8	85.2	23.0	44.7	1 to 1.94
Wheat Bran	13.1	5.1	81.8	14.0	50.0	1 to 3.57
Rye Bran	12.5	4.5	83.0	14.5	53.5	1 to 3.69
Rape Cake	15.0	7.4	76.6	26.3	33.5	1 to 1.18
Linseed Cake	11.5	7.9	80.6	26.5	41.2	1 to 1.46
Cotton-seed Cake	11.5	6.3	82.2	24.6	36.8	1 to 1.20

The first and second columns of figures show how much water and ash are contained in each material. 100 lbs. of turnips, for example, would yield about 92 lbs. of water, and 13 ounces of ashes, and only a little over 7 lbs. of organic matter. Though the ash has its use in the food of animals, and especially as manure, it will suffice here to take account only of the organic matter in the third column, and more especially its ingredients in the fourth and fifth columns, and the ratio of these in the sixth column.

Let the reader fix well in mind the fact, that the *albuminoids*, those substances which contain nitrogen, supply certain needs of the animal body, for which the carbo-hydrates, that are without nitrogen, do not suffice; as, for instance, the formation of muscle, and the curd of milk. The organs of digestion and nutrition of an ox or a cow, can not make muscle or fat without the proper ingredients in the food out of which to make them. Experience indicates in a general way what kinds of food are best for different purposes. But just here is where science is of great aid to practice. The wonderfully delicate weighing balances of the chemist and his accurate analyses, tell us exactly *what* elements every part of the animal body is made of, and exactly what is found in every variety of material grown and used for animal food. At the Experiment Stations the workers take a lot of animals and feed them with the utmost care, watching every development, analyzing and weighing all the food, the excrement, and even the air they breathe to learn what escapes in that. They combine the different varieties of food in a great many ways, and with careful hands and skillful eyes, note the precise effects with marvellous accuracy. They have learned, for example, that a working ox, or a milk-giving cow, needs not only more food, but also food containing a larger proportion of albuminoids than an ox *at rest*, or a dry cow. They have learned, for example, how much of different food materials an ox or a cow will digest, that is to say, how much is really nutritious and valuable as food, and how much is left to be useful only as manure. They have found, and this is a very important point, that when the albuminoids and carbo-hydrates are not mixed in the proper proportions in the fodder, a part of the really digestible material will not be digested, but wasted. And they have learned how oil-cake, malt-sprouts, and many other waste products should be mixed in the food, so as to secure the most complete digestion; and even how cattle may be made to obtain a large amount of nutriment from straw, chaff, and like materials, of which many American farmers make little account as fodder. Thus these careful experiments show how different kinds of food may be combined to secure the greatest *profit* from feeding. And the German farmers who unite these results with their own best experience, find a great practical saving therein—a saving in comparison with which the cost of the Experiment Stations is very slight. Science thus adds to the profits, and hence to the comfort, of farmers there, and will do so for us in proportion as we secure its aid.*

The element, *Nitrogen*, which is so important in albuminoids of food, as well as in guano and other fertilizers, though so abundant in the air, seems, so to speak, to be chary of being caught in plants and soils, and it is the most costly element of foods, as well as of manures. Further, German experiments show that the albuminoids can do the work of the carbo-hydrates in the nutrition of the animal, to a greater extent than the carbo-hydrates can that of the albuminoids. Hence, the albuminoids are the most valuable ingredients of food materials. The table above shows that 100 lbs. of medium meadow hay, contains about 8 lbs. of albuminoids; 100 lbs of wheat straw contains only 2 lbs., and 100 lbs. of turnips less than 1 lb., and so on. The table shows that in common hay the ratio of albuminoids to carbo-hydrates, is about 1 to 5. Experience and experiment agree that hay is a good fodder, and this in a proper proportion for ordinary feeding. But milch cows do rather better on clover, in which the ratio is 1 to 2½. So also a food richer in nitrogen is better adapted to oxen at hard work, and to fattening cattle. On the contrary, a dry cow or an ox at rest, would require only about 1 lb. of albuminoids, to 8 of carbo-hydrates. Straw of oats, wheat, or rye, cut when it is still tinged with green, and the "kernel is in the milk," contains these in the ratio of about 1 to from 13 to 18.

Accurate experiments many times repeated, have shown that oxen, or cows, or sheep, will digest and appropriate nearly as much from a pound of straw, as from a pound of good timothy or clover hay. But this digested material from the straw contains only very little albuminoids, and further, it will not be all digested unless some nitrogenous material is mixed with the straw. With a food mixture of straw and enough nitrogenous bean meal, to give a ratio of 1 to 8, oxen at rest in the stable are found to digest about one-half of the material of the straw, and all the meal. The chemistry of these facts, which are of incalculable value to farmers, we will explain in succeeding articles, and hasten now to give some practical directions for applying them.

The Science of "*Rational Foddering*" is indeed yet in its infancy, but rapid progress is making, and we want a score of Experiment Stations in this country to push on investigations, so that the present generation of farmers may have the full benefit of the developments. But we have some help already. Dr. Wolff, director of the Experiment Station at Hohenheim, in Germany, who has conducted a great many careful feeding experiments, and is, perhaps, the first European authority in these matters, gives from his own and hundreds of other investigations, coupled with the best results of farm experience, the following proportions of food ingredients as appropriate for daily rations for the animals and purposes specified. *These rations are calculated for each* 1,000 *pounds of live weight of the animals.* The crude fiber (in straw and hay) are useful in giving proper bulk or "ballast" to the food, and are to some extent digested also.

Table 3.

FOR DAILY FEED OR RATION FOR EACH 1000 lbs. LIVE WEIGHT OF THE FOLLOWING ANIMALS.	Organic Matter.	This Organic matter consists of: Crude Fiber.	Albuminoids.	Carbo-hydrates	Fat or Oil.	Ratio of Albuminoids to Carbo-hydrates.
	lbs.	lbs.	lbs.	lbs.	lbs.	
1. Oxen at rest in stall	14.1	6	.9	7.2	0.	1 to 8.
2. Oxen at moderate work	21.	9	1.85	10.15	0.	1 to 5.5
3. Oxen at severe work	25.	10	2.8	12.4	0.	1 to 4.4
4. Milch Cows in winter	24.	9	2.5	12.5	0.	1 to 5.
5. Richer Ration for same	25.	10	3.	12.	0.	1 to 4.
6. For Fattening Cattle	28½	6	3.2	14.3	1.2	1 to 4.5
7. For Growing Sheep	24.	10.3	1.96	11.8	0.	1 to 6.
8. For Fattening Sheep	28.	5	3.6	14.4	1.	1 to 4.

It will be seen that an ox at rest needs only 1 lb. albuminoids to 8 lbs. of carbo-hydrates; a working ox or milch cow requires a double quantity of albuminoids, for producing muscular work, or milk.

Now we are prepared to understand something of the reasons for the following tables, in which are given a few of the scores of combinations of food which German farmers constantly have by them, to use in judging how they shall best use, combine, and feed, such kinds of food as they have on hand or can best buy. We repeat that these tables are the results of many hundreds of the most extended and careful trials at the Experiment Stations, where every possible aid of chemistry and practical test, have been brought into requisition:

Table 4.—Giving a Daily Ration or Feed for the Animals named.

I.—For full grown Oxen not at Work.

A	or B	or C
1½ lbs. Clover Hay	3 lbs. Clover Hay	5 lbs. Meadow Hay
13 lbs. Barley Straw	13 lbs. Wheat Straw	7 lbs. Oat Straw
25 lbs. Beets	20 lbs. Turnips	5 lbs. Wheat Chaff
½ lb. Rape Cake		5 lbs. Potatoes

II.—For full grown Oxen at moderate Work.

D	or E	or F
12 lbs. Meadow Hay	9 lbs. Clover Hay	10 lbs. Clover Hay
13 lbs. Oat Straw	10 lbs. Rye Straw	14 lbs. Oat Straw
2 lbs. Oil Cake	22 lbs. Potatoes	20 lbs. Beets

III.—For full grown Oxen at severe Work.

G	or H	or I
12 lbs. Meadow Hay	14 lbs. Meadow Hay	15 lbs. Meadow Hay
12 lbs. Barley Straw	7 lbs. Clover Hay	8 lbs. Clover Hay
4 lbs. Clover Hay	9 lbs. Oat Straw	6 lbs. Wheat Straw
4 lbs. Bean Meal	2 lbs. Oil Cake	3 lbs. Wheat Bran

IV.—For Cows giving Milk.

K	or L	or M
12 lbs. Meadow Hay	10 lbs. Meadow Hay	10 lbs. Clover Hay
11 lbs. Barley Straw	12 lbs. Wheat Straw	10 lbs. Barley Straw
15 lbs. Potatoes	50 lbs. Turnips.	23 lbs. Potatoes
3 lbs. Oil Cake	3 lbs. Malt Sprouts	3 lbs. Wheat Bran
or N	**or O**	**or P**
6 lbs. Timothy Hay	50 lbs. Green Clover	36 lbs. Green Clover
80 lbs. Green Clover	60 lbs. Green Corn Stalks	80 lbs. Green Corn Stalks
5 lbs. Wheat Straw	8 lbs. Barley Straw	7 lbs. Rye Straw

A Richer Fodder for Same.

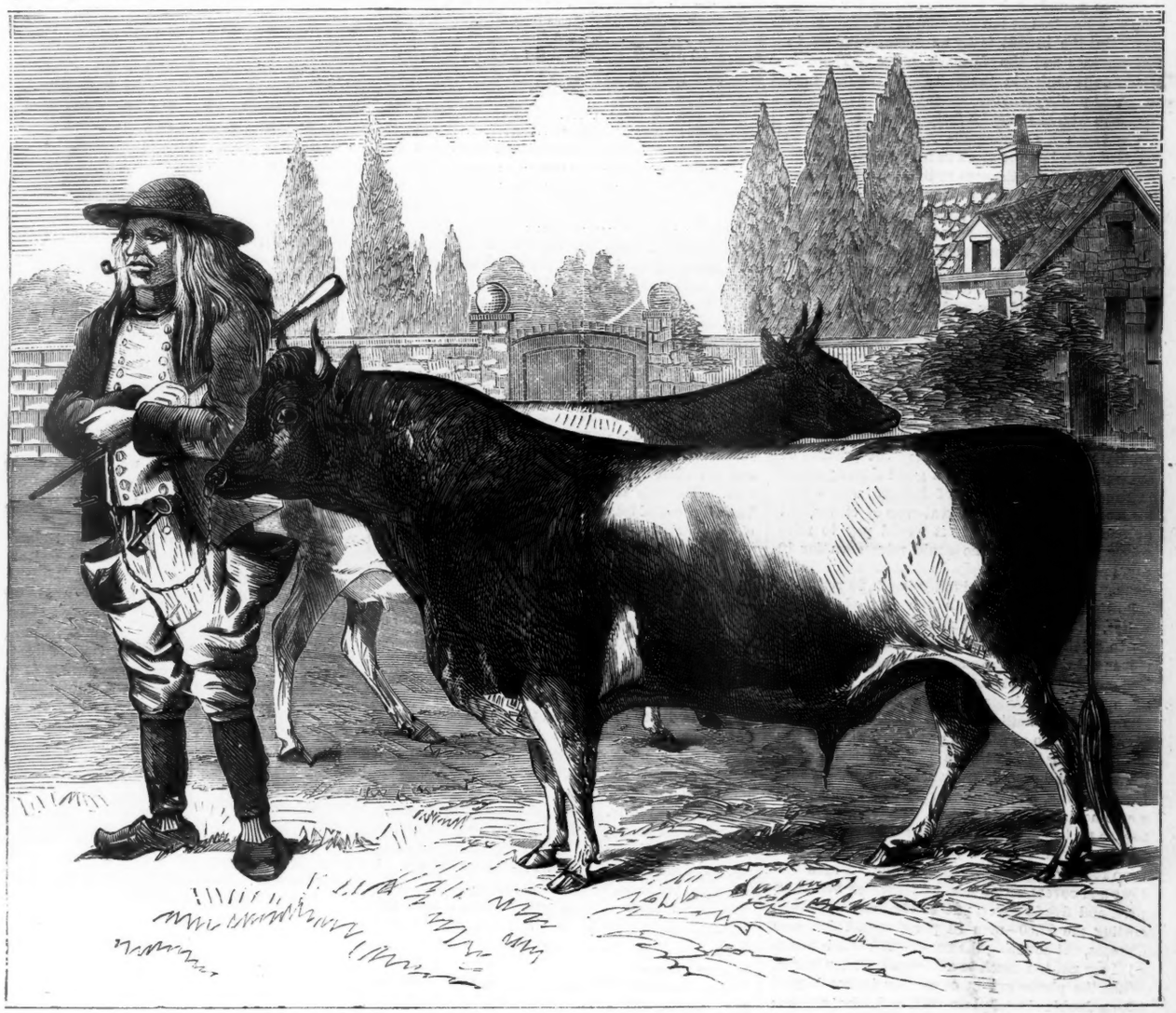
Q	or R	or S
10 lbs. Clover Hay	12 lbs. Clover Hay	10 lbs. Lucerne Hay
10 lbs. Oat Straw	10 lbs. Barley Straw	9 lbs. Oat Straw
5 lbs. Barley Chaff	5 lbs. Wheat Chaff	5 lbs. Timothy Hay
30 lbs. Turnips	30 lbs. Turnips	18 lbs. Turnips
3 lbs. Oil Cake	2 lbs. Bean Meal	5 lbs. Malt Sprouts

Note that the above tables are not for following exactly, but as indicating what *proportions* will give the best and most profitable results. The three tables A, B, C, each give about the same combination and amounts of albuminoids, carbo-hydrates, and fiber, and so of the other separate tables under each class of animals. Most of the substances named are obtainable by American farmers. In using the above tables, barley, wheat, rye, and oat straw can be substituted for each other. Either turnips or beets can be used, and either rape-cake, linseed-cake, or cotton-seed-cake as oil-cake or meal. The Germans cultivate largely linseed, vetches, etc., and their tables usually include these. We propose to give a much larger series of tables hereafter, fifty to a hundred of them perhaps, with such explanations as will make them useful to our farmers. But we ought to have Experiment Stations actively at work in several of our States, to produce results *exactly* adapted to American farming.

[* If our farmers feed only $500,000,000 worth of grain, grass, hay, and other forage in a year, and science can teach them to save but 2 per cent of it by teaching how to feed most economically, there is a saving of $10,000,000 a year, *and there is no doubt that this can be done*—an average saving of over a quarter of a million dollars to each State. As soon as people understand this fact, the State Board of Agriculture of Connecticut, or any other State, will not have to work a year or two or more to get an appropriation of a paltry five or ten thousand dollars to set up an Experiment Station to make the needed experiments to show farmers how to make this saving, or increase their profit by so much.—EDS.]

Breton Cattle.

There is no race that more clearly shows the effects of local surroundings upon breeding, than do the Brittany cattle. Brittany is a province of western France, a region of granite hills, and bleak moors, covered with heather and broom, amongst which here and there are narrow tracts of poor arable and pasture land. The forage upon which the Breton cattle are supported, is mainly bog hay, with occasional rations of pounded gorse or furze, as a treat or appetizer, and the pickings over scrub-by herbage of the hills and moors. The climate is bleak, foggy, and ungenial, being subjected to all the adverse influences arising from its exposure upon three sides to the gales of the Atlantic ocean. The Breton cattle are consequently of dimunitive size, but when removed to other localities, in which their treatment is more generous, they rapidly increase in size, and instead of a slight attenuated frame, they exhibit a deep carcass, which is shapely rounded, while they retain the fine limbs and deer like heads of their originals. The bull shown in the illustration, for which we are indebted to the London Field, is owned by Mr. J. C. W. Douglas, of Finisterre, France, and is three years and a half old. The portrait is a good representation of an animal of this breed as it appears under favorable conditions. The color is black and white, the body long and fine, the milking properties are well developed, the horns fine, white at the base, and black at the points, elegantly curved and somewhat elevated in position. When crossed with the Shorthorn, the produce is so much like the Dutch cattle, that this breed has been supposed to be one of the sources from whence the Dutch race has been derived. The persistence with which the black and white color, and general features of the Bretons are reproduced in all their crosses, show them to be a well established and pure breed. Upon the poor feed they usually receive, the cows yield on the average 12 quarts of milk per day, and 3½ lbs. of butter per week; in extra cases 15 quarts of milk per day, and 7 lbs. of butter per week is produced. Mr. Douglas writes to the Field as follows:



A BRETON BULL.—Owned by J. C. W. Douglas, Finisterre, France.

"Having had personally pretty extensive experience in milk stock of all sorts, during some thirty odd years of continual residence in Brittany, I hold the opinion that there does not exist anywhere a breed of dairy cattle, naturally so well up to the mark of what a milk cow should be, and so worthy of attention and improvement by the selection of good typical males and females from among themselves, and of course, by a system of better feeding. My accompanying sketch gives a good idea of a handsome bull of the breed, three years and a half old. I bought him young, and took several prizes with him. His father passed into the hands of Messrs. Robertson, of Eaton Farm, Cobham, Surry. The peasant, at the other end of the halter, is a good specimen of a sturdy Breton farmer."

The interest in the picture is increased by the introduction of a Brittany peasant in his odd, but rather picturesque costume. Those pantaloons, or breeches, would puzzle a fashionable tailor. But with these simple people fashions are not known, and the peasant dresses precisely as his ancestors did for many generations back, and as his children and grandchildren will for generations to come.

The Poultry Interest.

One of the best indications of the stronghold which rural pursuits have upon our people, is the increasing interest in fine poultry. It can no longer be called the "hen fever," for it is peculiar to no section, and the interest has already lasted several years, and seems to be increasing rather than diminishing. It has become a specialty, supporting numerous journals, and holding annual exhibitions, far more numerous than those of horticulture. Besides all that is said upon poultry in our numerous agricultural papers, we have about a dozen journals devoted exclusively to poultry and pet stock. The oldest of these journals, The Poultry Bulletin, is in its fifth year, and the Poultry World in its fourth, both, as well as others elsewhere, we understand, well supported, and gaining in reputation. The poultry shows, which are mostly held in the winter on account of the most perfect plumage and heaviest weight of the fowls, are scenes of the liveliest competition between the prominent breeders. They draw out the best birds from the choicest pens, and multitudes from city and country

throng the halls during four days in the week usually devoted to the show. The winning birds in the popular breeds command fabulous prices; from fifty to a hundred dollars being not infrequently paid for a single bird, that has only a single point of excellence, and three ounces of flesh more than his competitor. These exhibitions have a very great influence upon the breeding of the finer varieties of fowls, and the effect is visible in the egg and poultry markets. Chickens that are exposed for sale are at least a third larger than formerly, and the average weight of flocks of turkeys dressed at Thanksgiving and Christmas is steadily gaining. Fourteen pounds weight is as common for lots of fifty to a hundred as ten pounds was twenty years ago. But the benefit is by no means confined to the markets and the farmer's purse. There is something refining in the cultivation of the finer breeds of poultry and turning out finished products. The man who has raised a forty-pound bronze gobler, and seen his plumage in its glory, will not be satisfied with inferior stock in his herd or his fold. There is a feast for the eyes in the rich coloring and beautiful forms of our domestic fowls, and their presence about the farm-yard, or upon the lawn, cultivates the esthetic sense, and ennobles the farmer's art. Children grow up with a greater fondness for rural pursuits and for their homes. This is one of the things to redeem labor from its coarseness and drudgery, and to make our boys and girls content with farm life.

Walks and Talks on the Farm.—No. 135.

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I have frequently recommended the practice of letting pigs have the run of a good clover-pasture in summer. Mr. J. C. C., of Indiana, writes that his land would produce a great crop of clover, but he would like to know if it would pay to raise clover for hogs, when he could raise corn for 10 cents per bushel. In reply, I asked if this could be done. Mr. C. has been kind enough to send the following statement. "In the first place," he writes, "I have very good soil, and it is pretty new. As to rotation, I plow down just after harvest a clover sod. It is afterward cultivated and pulverized, and then about the first week in September sown to wheat. After the wheat is off, the land is allowed to lie until the next spring, when it is plowed for corn as early as possible. Then I leave it until immediately before planting. It is then harrowed, and cross-harrowed, and marked off four feet each way, and two or three inches deep, with a common single shovel-plow, with a cutter slanting, so that the lower end is nearer the shovel than the upper end. Then I have a small boy or girl drop four grains in each cross or hill. A man follows and covers with a hoe. Last spring five droppers, and five to cover, put in 13 acres in one day, costing me $7.50—men $1 per day, and droppers 50 cents, not counting the board. After it is planted, I am not too much in a hurry about tending it. When the plants get three or four inches high, I take a double shovel-plow, with a fender, and one horse, and run right up to the corn, and cut and cover everything except the corn. When I am through, I turn immediately, and cross-plow, before leaving the field. Here, I think, lies a secret, because you can not see a weed, and the soil is loosened all around the roots of your small corn. Take each field in succession this way, as it was planted, and weeds will not trouble you. I aim to plow this way twice over, and then last only one way, making five times in all. This season (1874) I only got through four times, and there was hardly a weed to be seen at husking time. This year I raised from 27 acres lacking only a few bushels of 1,800 bushels."

This is about 66 bushels per acre. "Stop a moment," said the Deacon. "I do not see anything wonderful in this method of raising corn. We plant in the same way here, only instead of having a boy to drop the four kernels in a hill, and a man to follow with a hoe, each man or boy drops the kernels, and then covers. There is nothing in the method of cultivating the corn that differs essentially from our plan."—Mr. C. continues: "You can not understand, why I can raise corn, and crib it, for 10 cents a bushel."—"Yes," said the Deacan, "that is what I want to know."—"In the first place," says Mr. C., "board and wages are not as high, as with you. My men cost me $30 per month in summer, say for eight months. In husking time I get men for $1.00 per day. And in the next place, I do not count full wages all the time, for the teams, because I have to keep so many anyhow part of the year, and if I hire an extra hand, the team costs me but very little more than if it stood in the stable. I will give you the cost, if I had to hire teams and everything, as near as I can, taking a field of ten acres. A team here [with man] will cost $2.50 per day, and board themselves, and plow two acres per day. The account will thus stand as follows:

"Plowing, ten acres	$12.50
Harrowing twice, 2½ days	6.25
Marking out, one horse and man, 2½ days	5.37
Planting	8.00
Tending	17.37
Husking and cribbing 600 bu., @ 5 cts	30.00
Total	$79.49

"This is 13¼ cents per bushel. But then, as I said, I hire my help for less than that, and the cost of the team would often be the same, work or no work."

"I have seen men figure in that way before," said the Deacon. "If the teams are lying idle in the stable, their cost must be charged to the farm. If you do not charge it to the corn crop, it must be charged to some other crop. What does he raise after corn?"—"He sows oats or flax, and follows with wheat, seeded down with clover."—"Then," said the Deacon, "I would like to see him carry out his statement, and tell us what these crops cost. There is interest on the land and taxes. There is cost of teams, and their death and depreciation. There is harness, blacksmith's bill, saddler's bill, cost of wagons, plows, harrows, cultivators, and other implements and machines, repairs, interest, and depreciation. There is the board of the men, and the washing, and the entire expenses of the farm. All these things have to be charged to the farm, and the corn crop should be assigned its due proportion."

The Deacon is right. Suppose Mr. C. raised nothing but corn, and that he kept six horses, three plows, two sets of harrows, three cultivators, one roller, three wagons, and the necessary spades, shovels, forks, hoes, corn-cutters, grindstone, ax, hammer, chisels, nails, bolts, screws, and the thousand and one little things necessary to carry on a well-managed farm. Now, in figuring up his corn costs, would he say, "I have got to keep six horses anyhow, and if I hire an extra hand, the team costs me but little more than if it stood in the stable. I have got the farm, and must pay interest and taxes, whether I plant corn or not. I must feed the horses, and keep them shod, and buy harness, and keep it oiled and repaired, whether the horses work or stand idle in the stable." If he argues in this way, and charges nothing for board, I presume he could figure down the cost of raising corn in a favorable season, and on good land, to something near 10 cents a bushel.

The truth is, farming is a very complex business, and it is not an easy matter to tell just how much any particular crop costs us. We have to take into consideration the condition and fertility of the land before the crop is raised, and after its removal. If any crop leaves the land in a foul condition, the cost of cleaning the field and restoring it to its original condition must be charged to the cost of that crop—not carried forward to the next crop.

One thing seems clear. The whole cost of carrying on the business should be charged to the farm before we begin to figure profits. When this is done, the arguments of Mr. C. are correct and to the point. For instance, he may say "my total expenses on the farm last year for interest, taxes, insurance, and repairs on barns, cost of teams, labor, seed, etc., were $2,000, and my total receipts were $2,500. They will probably be about the same this year. My corn cost me 35 cents a bushel, wheat 75 cents, oats 25 cents, potatoes 40 cents, and hay $8 per ton. My cheese cost me 12 cents a lb., and butter 20 cents. If I farm as hitherto, the cost of these products will be about the same. But I made some bad calculations. My horses cost me $750 a year, and I find they were not all at work more than half the time. This year I will try and do better. Instead of letting a team lie idle, I will hire an extra man for $1.00 a day, and set him to give the wheat fallow an extra plowing, or the corn field an extra cultivating. Last year a man and team, on an average, reckoning everything, cost me $4 a day; but this extra work will only cost me $1 per day, 'because I have got to keep the team and tools anyhow,' and if this extra plowing for wheat, costing say 75 cents an acre, should give me an increase of 3 bushels of wheat per acre, then this extra wheat will only cost me 25 cents a bushel, and the land will be in far better condition for clover and subsequent crops. And so, too, if I cultivate the corn an extra time, both ways, finishing 4 acres per day at a cost of 25 cents an acre, and I get an increase of 5 bushels per acre, then, after deducting 5 cents a bushel for husking and cribbing, this extra five bushels of corn per acre will only cost me 10 cents a bushel, and the land will be cleaner, mellower, and in better condition for oats and wheat."

Taking this view of the matter, Mr. C. is right. And the same remarks will apply to every operation of the farm. But you must first deduct from the total receipts the total expenses of the farm—and then the extra crops produced by extra cultivation, or the extra yield of milk, wool, beef, or pork, obtained from extra care and feed, can be charged merely what the extra labor or feed actually costs.

I am not sure but what we could sometimes adopt the plan of planting corn after wheat to advantage. It would enable us to clean the land. But I should not, on my farm, let the wheat stubble lie until spring before plowing. I would plow the land shallow immediately after harvest, and at intervals of a week or ten days harrow and cultivate it to reduce it to the finest tilth. This would cause the weed-seeds to germinate as soon as we had rain. The young plants could easily be killed by the cultivator, and the stirring of the soil would start more weeds. In November cross-plow six or eight inches deep, and let the land lie rough for the winter. The plowing in spring would bring the clean mellow soil again to the surface, and if the corn is thoroughly cultivated and the land is fall-plowed after the corn is harvested, we should have a field in admirable condition for sowing to barley and seeding down with clover.

We have just been killing our hogs. We weighed each hog alive, and again the next morning, after dressing. The following are the live and dead weights, with the per cent of shrinkage:

	Live Weight. Lbs.	*Dressed Weight. Lbs.*	*Actual Shrinkage. Lbs.*	*Percentage. Shrinkage.*
No. 1	492	424	68	13.8
No. 2	414	352	62	14.9
No. 3	407	354	53	13.0
No. 4	394	331	63	15.9
No. 5	376	322	54	14.3
No. 6	382	321	61	15.9
No. 7	370	314	56	15.1
No. 8	366	313	53	14.4
No. 9	345	291	54	15.6
No. 10	323	275	48	14.8
Average	387	330	57	14.7

In Lawes' and Gilbert's pig experiments the average live weight of the 59 pigs was 212¾ lbs., and the dressed weight 176¼ lbs., or an average shrinkage of 17¼ per cent.

I have killed hogs a great many years, but am ashamed to acknowledge that I never knew the proper temperature of the water for scalding, and I never met with the man that could tell me. The Deacon says he puts one pail of cold water to four pails of boiling water. If the water really boils, and if the water from the well was at a temperature, as

mine now is, of 46°, they would reduce (4 × 212° = 848 + 46° = 894° ÷ 5 = 178¼°) the water to a temperature of 178¼°. In point of fact, however, the Deacon carries his water from the kettle to the scalding barrel, and on a cold day each pail of water, as it was poured into the barrel, would lose considerable heat, and it is not probable that the water is anything like as hot as the above calculation would indicate. None of the books I have consulted, throw any light on the point. Morton's Cyclopædia of Agriculture, says: "The pig should be scalded on a board or cratch, by having the water thrown over it; or it may be scalded in a tub, if care is taken not to par-boil it, which is wrong, but only sufficient to cause the hair to come freely off." This is all very well, but what is "just sufficient?" Stephens, in his Book of the Farm, says, "pigs should be dressed," but does not say how. Loudon's Enclopædia of Agriculture, says that in some counties of England the hair is burnt off, but does not say a word about scalding. The Farmer's Dictionary, a Compendium of Practical Farming, chiefly from Rham, Loudon, Low, and Youatt, and the most eminent American authors," published by Harper Brothers, says: "The common method of dressing hogs in the United States, is to scald the carcass by immersion into a hogshead of water *heated by hot stones*, and rub off the bristles and scrape the skin by knives; the chine, head, and feet are also taken off." Thaer's "Principles of Agriculture," certainly a very able work, contains nothing to the point; neither does Boussingault's "Rural Economy," nor Johnson's "Farmer's Enclopædia," nor Fox's "American Text Book of Agriculture," nor Kemp's "Agricultural Physiology." After much search among the books and papers, I thought I had found it in an interesting article written by Charles Cist, of Cincinnati, "On the Hog and its Products." He tells how they dress hogs in the large establishments of that city, "at the rate of three to the minute," going into all the details. The scalding troughs are of a thousand gallons capacity, and are heated with steam, but he, like all the rest, most provokingly omits to say at what temperature they keep the water for scalding the hogs.

And so, when we were killing the hogs, I got a thermometer, and without saying anything, waited till the butcher pronounced the water just right. He is a very skillful and intelligent man, and got a good scald in every case, judging of the temperature of the water by his hand. I put in the thermomter, and after stirring up the water and keeping the thermometer immersed for a minute or two, I found the temperature of the water to be 152°, or 60° below the boiling point. After the hog had been taken out, the temperature was 147°. We tested several times, and found that this experienced butcher got the temperature within a degree or two of 150°, before the hog was put in.

A correspondent at Snow Hill, Ind., writes: "It is stated in the Scientific Record of Harper's Magazine, that Lawes and Gilbert's experiments show that Indian corn meal alone, is a defective diet for fattening hogs, and it is recommended to mix with it food rich in mineral and nitrogenous matters. Will you please tell us in Walks and Talks, what food to use and the proper proportions to mix with the meal, specifying by name the food or foods rich in mineral matter and nitrogen?" "Good," said the Deacon, "he hits you there. I have often been vexed at you for telling a farmer that 'foods rich in nitrogen and phosphoric acid, make rich manure,' as though that was telling us anything. You should specify the foods by name. Then you often say that fattening pigs require food 'rich in available carbonaceous matter,' as though that was giving useful information."—"Stop scolding, Deacon," I replied, "and let us see if there is any evidence that corn meal alone is a defective diet for fattening hogs. In the first place, there are say 15,000,000 hogs fattened in the United States every year, and I suppose at least 10,000,000 are fattened on corn alone. This fact would lead us to ask for very positive proof, before we decide that corn is a defective diet for fattening hogs. The single experiment referred to, is by no means conclusive. The facts are these. The pen of three pigs having corn meal alone, ate comparatively little food, and gained comparatively little. They ate 45¼ lbs. Indian meal each pig, per week, and gained 9.21 lbs. each per week. The three pigs having bran and lentil meal alone, ate 63 lbs. per week, and gained 12.62 lbs. The three pigs which were given 14 lbs. of Indian meal each, per week, and were allowed in addition, all the bran and lentil meal they would eat, ate in all 66 lbs. each per week, and gained 14 lbs. The pen of three pigs which were given 14 lbs. of bran each, per week, and were allowed all the corn meal they would eat in addition, ate 58¼ lbs of the two foods, and gained 12.42 lbs. The pen of three pigs which were given 14 lbs. of bran, and 14 lbs. of bean and lentil meal each, per week, and all the corn meal they would eat besides, ate 64¼ lbs., and gained 14.46 lbs. This was the largest gain of the series."

Taking the above facts as they stand, [Full details of these experiments will be found in "Harris on the Pig," page 122. Ed.], it is clear that if we wish a pig to fatten rapidly, our great aim must be to induce him to eat as much food as possible. It does not seem to make much difference whether the food is corn meal, barley meal, or bran and lentil meal, (say pea-meal), and we may reasonably presume the same is true of wheat, oats, or rye meal. If they will eat enough and digest it, they will gain rapidly. More seems to depend on the pig than on the food.

Now it so happened that two of the pigs in the pen of three which had Indian meal alone, had large swellings on the side of their necks. The hogs seem to have been a quarrelsome set, and it is not impossible that these swellings were the result of a vigorous scratch from the teeth of some of their neighbors, before or after they were shut up to fatten. In my own large herd of pigs, I find large swellings from this cause by no means uncommon. I lance them and they soon get well. Still, it is a fact that these swellings were found on two of the pigs having corn meal alone, and I suppose on none of the others. And it *may* be that the food was the cause of it, and that Indian meal alone is a defective diet. Still, I do not think so. There is no positive proof. The two pigs which had the swellings gained much more than the pig in the same pen, which was not affected. For twelve days before the experiment commenced, all the pigs had the same food. During these twelve days, one of the pigs which afterwards had the swellings, gained 28 lbs., and the other one 20 lbs.; while the other pig gained only 5 lbs. After these three pigs were shut up and fed Indian meal alone, the first of the three pigs gained in 8 weeks 96 lbs., and the other 71 lbs., while the one not affected with swellings, gained only 54 lbs. This last pig probably ate comparatively little, and consequently gained little. It was not defective food, but defective appetite.

In the pen having bean and lentil meal, and bran, and all the Indian meal they would eat in addition, one of the pigs gained 142 lbs. in 56 days. And one of the pigs in the pen which had 2 lbs. of bran each per day, and all the corn meal they would eat, gained in the 56 days, 143 lbs. This was the largest gain of any pig in the series.

And so, if my correspondent thinks Indian meal a defective diet, he can give his pigs two pounds each of bran per day, in addition to all the corn meal they will eat.

It must be understood that we are talking about pigs shut up to fatten. And my own opinion is that Indian corn is not a defective food. For store hogs, or young pigs five or six months old, that we wish to grow rather than fatten, I would give more bran (or clover), and less corn meal. Corn is, I think, the most fattening of all cereals, and is too rich for growing pigs. In the winter we have no better food than bran to mix with the corn meal. And if we could give a few mangels or other roots, so much the better. They are easily digested and keep the pigs healthy. In the summer green clover will be the best addition to the corn meal.

I am feeding my own herd of breeding sows on steamed clover hay, cut about half an inch long. We mix a few sliced turnips or mangels with it, and steam it altogether, sprinkling a little fine middlings or corn meal on it in the troughs, before letting out the pigs. If the clover hay is cut early and nicely cured, it is as good as bran, and in my case a good deal cheaper. At any rate, it lessens my meal bill.

Some Cheap Fences.

Several correspondents have kindly sent us descriptions and sketches of cheap and convenient fences, which we here illustrate. "J. M. S.," of St. Joseph, Mo., sends a description of a light portable fence, shown at fig. 1, as follows: An oak log 16 feet long is sawn into strips 1¼ inch thick, by 2 inches wide. These strips are cut into an equal number of pieces 5 and 3 feet long respectively. The longer pieces are the posts, and the shorter ones the braces. The posts are driven into the ground about one foot. A short stake is driven into the ground, two feet from the bottom of the post. The brace is nailed with a tenpenny nail, partly driven in, so that it can be easily driven back and withdrawn, to the post and the brace. The posts may be made to lean backwards if thought desirable. This will be an improvement to the fence, if the pickets are only slightly attached to the wires. The posts are bored with three holes, so that three light fence wires may be run through them. For a light garden fence, corn-stalks stripped of their leaves, or brush, or lath, may be woven in the wires. If pickets are used, they may be fastened to the wires with light staples, or in any other manner that may suggest itself. Fig. 2, represents a portable fence sent us by "a Virginian." It consists of the usual posts and rails, but instead of morticing the posts, they are simply bored to admit a fence wire. A piece of the wire is passed through the holes, forming a loop on one side, into which one end of the rail is placed, and at the other side of the post, the wire is twisted around the end of the rail of the next panel. This is shown in the illustration. Boards may be used in place of rails, and the fence will be much stronger than if the boards had been nailed on.

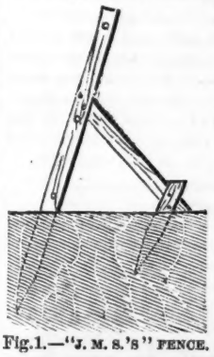


Fig. 1.—"J. M. S.'S" FENCE.

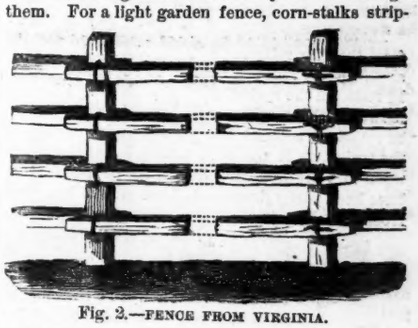


Fig. 2.—FENCE FROM VIRGINIA.

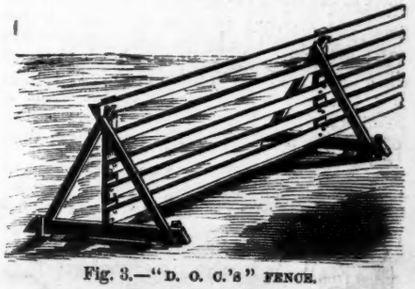


Fig. 3.—"D. O. C.'S" FENCE.

Figure 3 is a movable fence described by "D. O.

C.," Crawford Co., Ohio. It consists of a sill 4 feet long, 5 inches wide, and 1¼ inch thick. A gain is cut in the upper edge, and the ends are cut with a bevel, as seen at *a*, figure 4. The upright pieces on which the boards are nailed, are 4 feet 8 inches long, and also 5 inches wide and 1¼ thick. The lower boards are 6 and 5 inches wide, the three upper ones are 4 inches, and all one inch thick. The spaces between the boards from the bottom upwards are 4, 5, 7, and 9 inches. The first panel is made before it is set up. It is then set up with the lower part inserted in the gain, and is braced as shown in the illustration, with braces, cut in the shape seen at *b*, fig. 4. The sills are raised from the ground an inch or two to preserve them from rotting, by a small stone or piece of wood, and are held in place by means of a stake driven in the ground. This fence is said to cost only half as much as that with posts, and lasts much longer.

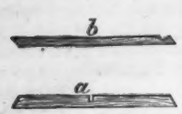


Fig. 4.—BRACES.

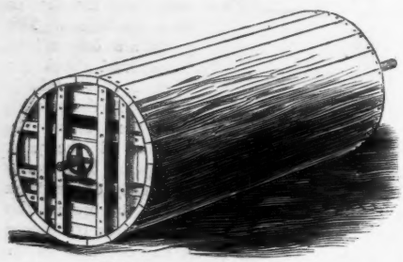


Fig. 1.—WOODEN ROLLER.

More About Field-Rollers.

There are few more useful implements upon the farm than the roller, and its use should be encouraged. Every meadow that is to be mowed should be rolled in the spring, more especially if it is to be mowed with a machine. Fall wheat or rye should be rolled as soon as the ground is dry enough in the spring, as it will have a very beneficial effect upon the crop, saving thousands of plants that have been partly drawn out of the ground by spring frosts. Rolling is of great advantage after sowing clover or grass seed, as it compacts the soil about the seed, which helps germination. It is very useful for the same reason upon a cornfield as soon as it has been planted, and for all root crops the field should be rolled when they are planted. We here give in response to many requests, directions for making wooden and cement rollers. The first can be made at a very small cost by any farmer who can handle tools, and the second needs but very little skill, and the material is not costly. The wooden roller is shown at figure 1. It is built upon a square piece of oak timber, 12 inches thick and 8 feet long. Pieces of 4×4 oak scantling are bolted to the timber, and others are bolted to them, as shown in the illustration; strips of three-inch oak plank are then dressed upon their edges so as to fit closely, and these are firmly spiked upon the frame of scantling. When these are filled, the outer surface of the roller is planed down at the joints of these

Fig. 2.

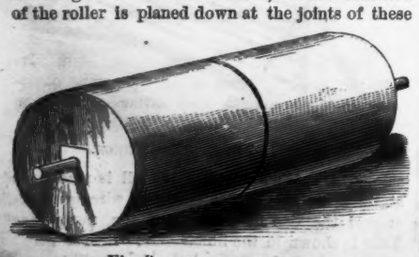


Fig. 3.—CEMENT ROLLER.

strips, so as to make it perfectly round. At each end of the roller a winged gudgeon is fitted into the center timber for the axles. This gudgeon is shown in figure 2. It is 8 inches long and the same

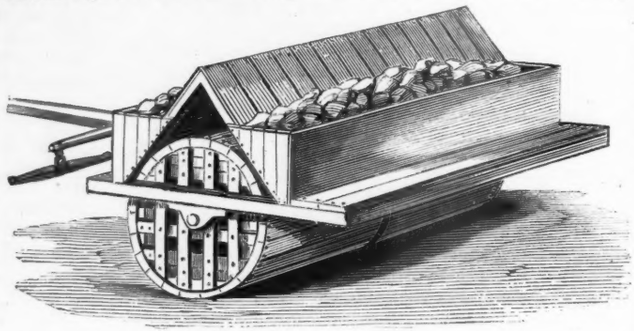


Fig. 4.—THE ROLLER COMPLETE.

in width; the inner end is brought to a sharp edge, so that when the timber is bored to receive it, in part it may be driven up to its place, making a tight fit. To prevent the timber from splitting, an iron ring, sharp upon one end, half an inch thick, and four inches long, is driven in around the gudgeon before that is driven home. The ring is shown in figure 2, and the manner of its use in figure 1. This roller is 32 inches in diameter and 8 feet long. It may be made in two sections of 4 feet each, by having the central timber bored from end to end, and using an iron rod of 1¼ or 2 inches in diameter for the axle. In this case an iron washer or plate should be fitted to the end of the central timber, and an iron ring two inches thick be shrunk or keyed on to the axle, to prevent it from sliding back and forth.

The cement roller is shown at figure 3. It is made of a mixture of one part of Rosendale or Portland cement with three parts of fine sand. The cost may be reduced by making the central portion of coarse concrete of broken stone, with the mixture above mentioned. Equal parts of broken stone and cement and sand may be mixed for the concrete. The mixture is placed in a mold, in the center of which is placed the wooden axle, and is rammed down firmly. The solidity of the roller depends greatly upon the ramming down of the cement. The mold is a wooden tub without a bottom, made purposely, smoothly finished inside and put together so that the hoops may be knocked off when the cement has set, and the staves taken apart. The roller is made in two parts, each four feet long, and 30 or 32 inches in diameter. Either of these rollers may be used in the frame shown in figure 4. This is made with a step behind for the driver to ride upon, and a box in which stone may be put to increase the weight, if necessary. The frame and box is so completely shown in the illustration, that no description is necessary. The timber used should be oak, and as weight and strength are the objects aimed at, it may be as heavy as possible. Rollers of various kinds are sold, including those of iron, and if one has the money to invest in such an implement, can be suited with but little trouble. Many farmers, who have thus far managed without a roller, think they will continue in the old way, rather than be at the outlay required to procure one. There is really but little outlay of money required. If the farmer is the mechanic he should be, he can do all the work himself, except the blacksmithing.

How to Make a Pole Fence.

"W. L. T.," Mount Hope, Wis., gives the following method of making a pole fence, which may be usefully adopted where the timber is too small to be split. The method may also be applied in part to the preparation of split rails for a post and rail fence of the ordinary kind. The poles are cut 10 feet long, the posts being set 9 feet apart. Each end of the pole is hewed flat, so that it can be nailed to the post. For convenience in hewing them, the following contrivance is used. A pair of blocks are procured, and made into a "bed," by nailing strips to them, as shown in fig. 1. These blocks may be kept exactly so far apart that they will serve as guides for trimming the poles to their proper length. Notches may be cut into each block, in which the pole to be trimmed is placed. A "horse" is used to hold the pole firmly, while it is being trimmed. This is made of a heavy pole, 20 feet long, and a foot thick at the butt end. At the thick end two legs, 3 feet long, and at the other end two pins, 8 inches long, are inserted. The pins

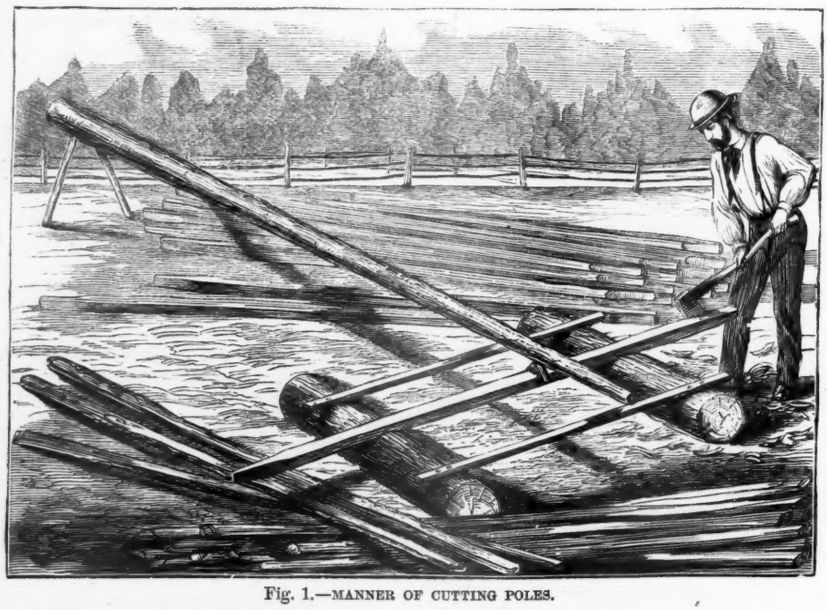


Fig. 1.—MANNER OF CUTTING POLES.

Fig. 2.—CUTTING-HORSE.

are placed so that when they are made to rest upon the pole, they grasp it and hold it firmly. The horse is shown in use in fig. 1. While the pole is

thus held, the ends are without difficulty trimmed and hewed, as may be desired. Fig. 3 shows the method of building the fence. The ends of the poles are nailed to the posts, and to keep them

Fig. 3.—PLAN OF FENCE.

level with one another, each end of the pole to a different side of the post, or each panel of fence may be nailed to opposite sides alternately.

A Road-Grader.

Graders for repairing roads are coming into more general use. Even the rudest of these implements is of great service in smoothing and compacting the surface, and in giving a proper slope to the sides of the roads. But some of these are better than others. One of the best of them is shown at fig. 1. It is made of a piece of heavy hard-wood plank, 10 feet long, (or longer, if necessary,) 12 inches wide, and 3 or 4 inches thick, to which a long tongue is mortised and well braced. The bot-

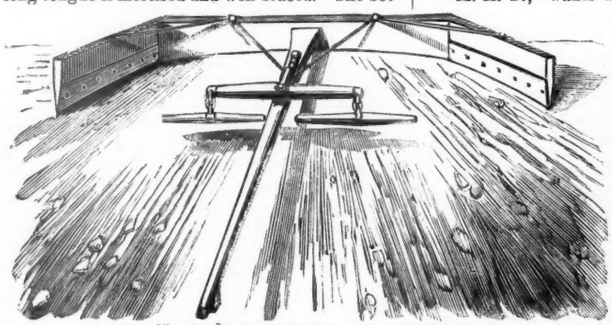


Fig. 1.—A ROAD-GRADER, OR SCRAPER.

tom edge of the plank is hollowed out, to suit the curvature of the road-bed. A curve of 3 or 4 inches from the ends to the center, would be sufficient to give a good shape to the road. A wing of similar material, fastened to each end of the long plank, and well braced in such a position that it projects forward about 45 degrees. The ends of the wings are depressed 8 or 10 inches, as shown in the section, fig. 2, which represents the shape of the road-bed, when finished. The lower edges of the wings are beveled, and strengthened with a band of steel, 3 inches wide by ¼ of an inch thick. When the sides of the road-bed have been plowed, this implement will draw the loose earth toward the center, and there level it. Its occasional use during the summer and fall, after wet weather, when the

Fig. 2.—SECTION OF ROAD-BED.

road has become cut up into ruts, will fill the ruts, and make the surface smooth and level again.

An Improved Pig-Trough.

A Western subscriber sends us a description of an improved pig-trough, which has many advantages. It is shown in fig. 1. The bottom of the

Fig. 1.—IMPROVED PIG-TROUGH.

trough is an oak plank 12 or 14 feet long, 12 inches wide, and 2 inches thick. The edges are beveled so as to fit the slope of the side boards. The ends are of the same material, cut with a proper slope to form the shape of the sides, and nailed firmly to the bottom with 6-inch spikes. The sides are of sound 1¼-inch pine plank. A pine board is suspended over the center of the trough 6 inches above the bottom by iron rods bent and flattened out at the ends. The flattened ends are punched with holes, through which small carriage bolts are put, to fasten the center-board in its place. Figure 2 shows a section of the trough, the shape of the iron rods, and the manner in which they are attached to the center-board, and the sides of the trough. Pigs can not wallow in this trough, nor get into it when feeding, and if several of the iron rods are used, so as to divide the trough into sections, a good deal of quarreling and fighting over the feed will be prevented, as each animal may then have its own section, and can not crowd its neighbor out of that which belongs to it.

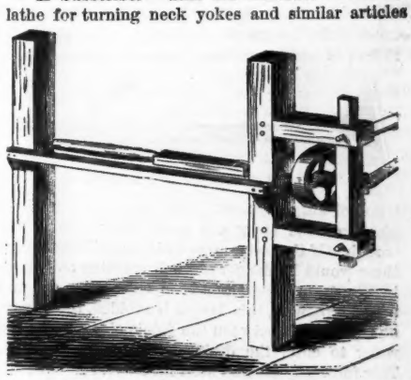
Fig. 2. SECTION.

To Draw Water from a Spring.

"M. H. P.," wants a method of drawing water from a spring 160 feet from his house, and 17 feet below its level. He asks if a suction pump at the house, with cement pipe laid to the spring, would operate successfully. If any readers of the *Agriculturist* have had experience in drawing water under similar circumstances, we should be glad to hear from them. In the meantime our correspondent can feel assured that the plan he proposes will fail. No suction pump will operate unless the pipe is air tight, which a cement pipe is not. Even with a lead or iron pipe, a suction pump in such a case as this, will not operate successfully. The valves of the pump will almost always leak air, and the water falls back again to the spring, leaving the pipe empty. When the pump is worked, a long column of air must be removed before water can be drawn up; this requires a great amount of labor, and if the valves are not perfectly air tight, it is impossible to do this, and the pump is useless. In a case in which the plan proposed by M. H. P., had to be abandoned, one here described and illustrated was successfully adopted, and is offered as a suggestion. At the foot of a village lot, was a shallow well or deep spring, about 150 feet from the house. A force pump was set in the spring, and a tin-lined lead pipe was carried to the house, two feet beneath the surface of the ground. A series of common fence posts were set up 25 feet apart. Strong hard wood pins were inserted in these posts, at the top, projecting horizontally and at right angles to the line from the house to the spring. Arms about three feet long were pivoted upon these pins, and secured by pegs driven through the ends of the pins. These arms were connected by fence wires at each end. The arm at the end next to the house, and that next the well, had handles attached at right angles to them, as shown in the engraving. When the handle at the house was moved up and down as a pump-handle might be, that at the well was moved in the same manner. This last was attached to the pump rod, and as it was moved the pump was worked, and the water was forced through the pipe to the house. As the valves were always wet, and sustained the pressure of several feet of water, they never leaked, and the pipe was always full of water. By keeping the pivots of the arms always lubricated with soft soap, or black lead and tallow, they worked with ease, and it was no more difficult to raise water by this contrivance, than to work an ordinary pump in a 20-foot well.

A Home-Made Lathe.

"A Subscriber" asks for an illustration of a lathe for turning neck yokes and similar articles



A HOME-MADE LATHE.

for farm use, and which can be operated by a common horse-power. Such a lathe is shown in the accompanying engraving. It consists of two posts firmly set in the ground, one of which may be a post of the workshop, or of any outbuilding or a frame attached thereto. A small shaft having a chuck keyed upon one end, and carrying a pulley, is fitted into a frame having a sliding post, as shown

A WATER-DRAWER.

in the illustration. A thumb-screw is attached to the other end of the shaft, in such a way that the shaft and the chuck may be accurately adjusted to the work in hand. The sliding post is held in place by pins, and may be moved back or forth as may be desired. A rest is bolted to the posts, upon which the guide or slide rests, may be fixed. An ordinary one horse tread-power, would be sufficient to run this lathe, giving from one to two thousand revolutions of the lathe per minute, according to the diameter of the pulley used. In turning neck yokes or whiffle-trees, it would be a saving of time to turn two from one piece of timber, as shown in the illustration.

Making Wooden Drains.

When no other material than wood can be procured, and draining must be done, wooden underdrains are preferable to open surface drains. In

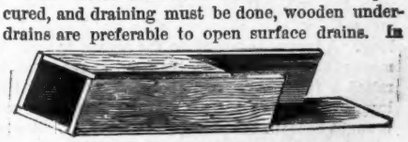


Fig. 1.—SQUARE WOODEN DRAIN.

reply to a correspondent, we describe a few kinds of wooden drains that may answer the purpose of better ones when those are not to be had. Hemlock boards will be found the most durable in situations where the drains will be always flowing. If

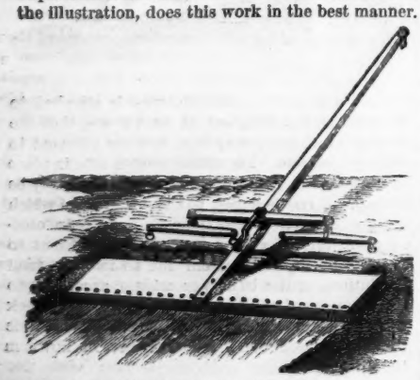
they will be alternately full and dry, no timber can be depended on for more than 8 or 10 years; otherwise hemlock will remain serviceable for 20 years. Strips 3 inches wide may be taken and sawed into lengths of 3 feet. Of these, square tubes are made, and placed in the drain as shown in figure 1. The strips are cut into these short lengths so as to give a sufficient number of openings for the entrance of the water, and in nailing the strips together, at least one-sixteenth of an inch should be left between the ends of the strips for this purpose. Strips of this size will make a drain 2 inches in diameter. When larger drains are made, wider strips may be used, and to save lumber, they may be made in the shape shown at figure 2. Two strips are nailed together at their edges to form the channel of the drain, which should always be placed with the point downwards, for the purpose of causing a more rapid flow of water, and thus preventing the accumu-

Fig. 2.—TRIANGULAR DRAIN.

lation of silt or deposit. The covering is made of pieces of the strips cut to fit the width of the trough. If the strips were to be nailed lengthwise, there would be danger of their splitting and spoiling the drain after it had been laid; when cut and nailed crosswise, this danger is avoided, the numerous spaces left between the joints also permits the water to enter the drains with greater freedom. This form may also be used for a small sized drain, and three four-inch strips will cost the same as the four three-inch strips used in the other form, (fig. 1). One thousand feet of boards will make 1,000 feet of drain of this size, and the cost of nails will be a trifle. The cost of a drain of this kind may, therefore, be easily ascertained.

A Brush-Harrow.

When manure has been spread in the fall or winter upon meadows, it should be broken up and evenly scattered in the spring. The most effective method to do this is by hand, but it is too laborious. The ordinary harrow gathers the manure into bunches, instead of spreading it, and some better implement is needed. The brush-harrow, shown in the illustration, does this work in the best manner.



A BRUSH-HARROW, OR DRAG.

When drawn over the field, with the driver standing upon it, it rolls the lumps of manure over, breaks them up, and leaves them well incorporated with the sod. It is made of an oak plank, 4 inches thick, 14 to 16 inches wide, and 8 to 10 feet long. A tongue is bolted to the center, in such a manner that, when in use, the front of the plank is raised a few inches from the ground, so that the lumps of manure are not pushed along, but are brought beneath the plank, and broken up. A row of holes, 1¼ inches in diameter, are bored at the rear edge of the plank, about 2 inches apart. If the plank is weak, and there is danger of splitting it, the holes should be bored in two rows, every alternate hole being two inches further from the edge of the plank than the others. The butt ends of small brushy limbs of tough wood, such as oak or hickory, may then be placed in these holes, and split and wedged, so as to be held firmly. This makes a brush-harrow of the best kind, which will break up and pulverize the manure, and work it into the grass. This brush-harrow is also an excellent implement to finish the surface of a field newly sown with grass seed, or to brush over a wheat or rye field in the spring, after clover seed has been sown.

Gardening on Shares.

BY PETER HENDERSON.

So many write to me for advice as to gardening on shares, for persons with capital to undertake gardening, and many other matters relating to the business aspects of market gardening, that I can no longer answer by letter, but ask you to allow me to make a general response through the *Agriculturist*. Inquiries as to gardening on shares come from every section of the country, some of them from districts where to carry on the business in any form would be next to impracticable, and if done on shares, utterly absurd. In an experience of over a quarter of a century, I have never known of but a single instance in which gardening on shares was carried on for more than three years, and even in that instance it resulted in failure, and was throughout most unsatisfactory. It *may* now and then be judicious enough for the owner of land to work on shares with a man *he knows all about*, and who has proved himself capable and otherwise worthy of confidence, but to expect, as nine-tenths of my correspondents on this subject do, that a gardener can be found to order, who can be warranted as capable, honest, and amiable, and every other way qualified to fit such a position, is expecting a little too much from poor human nature. In all such cases, where a man is an owner of land that he wishes to convert into a market garden, let him engage a competent man, if he can get him, and pay him a salary for at least one year; then, if both find that they can trust each other, and their experience has shown what a fair and equitable arrangement would be, it will then be time enough to try what can be done on shares. Such men are scarce, I know, and high-priced when found, but men fitted to be partners with those whom they never before saw, are still scarcer, and would be likely to prove dearer than the salaried man would be. Then we have another class that inquire for moneyed partners. Only last week I had a letter from a gentleman, evidently educated and intelligent, writing from some unheard of hamlet in Louisiana, who modestly asked me to endeavor to find him a partner having a capital of $5,000, to engage in the business of fruit and vegetable raising. Whether he was of the class alluded to in your humbug article in December, I know not, but if not of that class, he was certainly quite unused to the ways of the world. Were this a solitary case, I would not have alluded to it, but I have had many such applications, though none of them are so utterly absurd as this. The writer of your humbug article tritely says: "Leaving money out of the question, how can a sensible person associate himself in business with an entire stranger!"—This sums up the whole matter, and should be a sufficient answer to all who are foolish enough to think working partners (to them utterly unknown) are ever likely to be found—having the combination of qualities necessary to successfully run a farm or garden on shares. There is another class of inquirers—many of them in far distant States—who have farms or gardens they wish to rent or to sell. If these people would think a minute, they would see how unlikely it is that any one can be found to bite at such a bait, no matter how fine it may be shown to be, in a country like ours, where land for such purposes is almost everywhere a drug. If land is to be rented or sold for market gardening, it must be to some one who is nearer to it than a thousand miles.

[This note of our contributor shows that we are not the only ones who are asked to do impossible things. Not a week passes but we are offered a commission to sell property in some far-off locality, to find a gardener on shares, to look up a capitalist to help develop a farm that has "minerals" on it, or some such thing. The very day this article came, we had a letter from a gentleman in a Southern State, offering us $200 if we would find him a practical man *with capital*, to go into fruit growing. We would say to all such, that when the publishers or editors of the *Agriculturist* wish to sell or rent property, or wish to engage a man for any purpose, they advertise in the journal most likely to reach the persons they seek. They have done this during the past year, and are not likely to make personal exertions to dispose of the property of other people, when they have no time to do it for their own. As to market gardening, land is a secondary consideration, and a market is the first. A man had better pay $1,000 an acre for land near New York or other large city, than to take it at a distance for nothing.—ED.]

Willows—Osier.

Every few years some extravagant statements in regard to the profits of the cultivation of osiers, causes a mild excitement, and we are in the receipt of letters of inquiry, some of which ask us about one point, and some about other points in relation to their culture. This article is intended as a reply to several letters, and covers about all the ground. In Europe, where osiers are an important crop, very nice distinctions are made in the quality of the rods, and those intended for the finer kinds of basket work, are yielded by different species, or varieties, from those intended for coarser work; the rods of some kinds are valued for their strength, while the others are for their suppleness and the readiness with which they may be woven into intricate designs. In some of the English catalogues there are over 30 kinds enumerated, most of which are not to be procured, and not even known in this country. Those who wish to undertake the growth of osiers, must either import their plants to start with, or be content with the few kinds that can be had at our nurseries. It is commonly supposed that to be useful as osiers, the willows must be naturally of a dwarf growing kind; this is a mistake; the production of osiers is a matter of cultivation, and if the twigs are of a useful quality, the largest species may be used as well as the smaller ones. The number of willows offered by our nurserymen is very small, and mostly of ornamental varieties, such as the Kilmarnock, Weeping, etc. They generally offer "osier willows," without designating the species, and we assume that it is the common White Osier, *Salix viminalis*, a kind remarkable for its rapid growth, and the great length of its shoots, but its rods are not so tough as those of some other species. The White Willow, *S. alba*, about which there was so much excitement as a hedge plant, a few years ago, may be made to yield useful osiers, but not so good as that of its variety, *Vitellina*, the well known Golden Willow, very common as a large tree, and conspicuous by the bright yellow color of its recent growth. This is much cultivated in England, as an osier. One of our native species, the Shining Willow, *S. lucida*, also called the Laurel-leaved and Bay-leaved willow, is the handsomest of all willows, (See *Agriculturist*, April, 1873, for engraving), and will give good rods for coarse work. These, so far as a thorough inspection of the leading nursery catalogues goes, are all the kinds readily attainable, though there are others in private hands. It is possible that a trial of other vigorous native species, may show that some of them are worth cultivating, and in the older parts of the country, some of the European osier species have become naturalized, that are not to be found in the nurseries. Because some willows grow naturally in wet places, it is a mistake to suppose that low damp ground is essential to osiers; the fact is that the best osiers are only grown upon good soil, which should be drained and prepared as for ordinary farm crops. Willows are always propagated from cuttings, which are of branches of one, or at most two years' growth; these are cut into pieces a foot long, with one clean slanting cut, and sharpened at the lower end, to

facilitate pushing them into the soil. The distances apart depend upon the variety; the common osier is set 12×20 inches, while the Golden-willow is put out 8×16 inches; these are about the extremes; the plants are set closely, to induce a straight upward growth. In setting, a planting frame is used, made with slats to mark the distance between the rows, and upon these are notches, to show the position of the plants; the planter having his hand guarded with a leather glove, pushes the cuttings in a slanting direction quite into the ground. The surface is to be kept clear of weeds, by the use of cultivator and hoe, and each fall the land is stirred between the rows with the plow, and manured if need be. The first year the shoots are of but little value, but they must be removed, in order to induce a strong growth next year. As soon as the leaves have fallen, the shoots are cut with a sharp hooked knife, close to the ground; the second year's shoots will be of value; each cutting must be close to the ground, and no stump or stub formed above the surface. The rods are tied in bundles of 3 feet girth, measured at 8 or 9 inches from the but-end. In England, where the cutting is paid by the bundle, this is the established measurement. The bundles are stood on their but-ends in water, to the depth of 6 or 8 inches, fixed so that they will not blow down, and when they show signs of growth in spring, the bark will be sufficiently loose to peel easily. This article is already too long to allow the process of peeling to be described. Another method is to set the bundles up where they will dry, and then put them under cover; these osiers are peeled by first boiling or steaming, and though the rods are not so white as the others, they are much more durable.

As to the profits of osier culture; the commoner kinds, in England, bring a net return of about $80 per acre, while in some cases the better varieties, under the most careful treatment, give a profit of about $100 to the acre. When cultivated as here described, the roots are readily removed from the land if it is needed for other crops.

It may be added that a few willows treated by cutting back every year, will be found useful upon any farm, as furnishing withes servicable for a great variety of uses, and florists and nurserymen can in this manner easily provide themselves with stakes for flowers and other plants.

The Management of Commercial Hot-beds.

BY J. B. ROOT, ROCKFORD, ILL.

To the commercial florist or gardener, even with the most complete greenhouse, hot-beds are a very desirable and profitable adjunct, enabling the business to be largely increased with but small expenditure; and when capital is limited, and there are several uses for every dollar, they make a very serviceable substitute for a greenhouse in the production of vegetable plants, and in bringing forward the more popular flowering plants which have been procured already rooted from large growers. Well managed, they yield the larger profit of the two. They burn no wood, and need no midnight fires, and the manure used in them is more valuable after than before, and their cost is not great, especially if a fair proportion of the beds be covered with cotton cloth, as described in the February No. of the *Agriculturist* of last year.

But to be made profitable, it is not enough merely that they be managed to produce *good plants*, but they must produce them at the *least expense* consistent with good quality. There seems to be a feeling with amateurs and beginners that somehow it helps a hot-bed to hover over it, and "fuss" with it lazily, which leads to a vast deal of dawdling that hardly comports with profit in any business. While everything should be touched lightly and handled carefully, yet all can be done expeditously, and the conditions of healthy growth still be preserved. Unnecessary labor and uselessly multiplied steps in no wise promote thrifty growth, while every available economy of labor and of method does promote profit.

After a little experience in making beds, it is not necessary that *all* the manure be piled and turned a certain number of times, and in fact only a part of it need be piled at all. Only enough hot manure need be used to start fermentation throughout the bed; but to secure this promptly, it should not be mingled hot and cold together, but the hot kept in considerable quantity, say in layers of six inches or more, alternately hot and cold, provided only that the cold be not actually frozen, or at least but a small part of it. If, perchance, too much cold manure has been used, and the heat rises tardily or unevenly, a few pailfuls of scalding-hot water will at once start fermentation. Made in this way, half the labor is saved, the beds maintain their heat longer, the yard is less impeded with piles, and much time is saved at a hurrying season.

Making compost heaps of alternate layers of sod and manure, from which to procure hot-bed soil, is expensive and laborious, and in the dry climate of the West, at least, the soil is not ready for use for two or three years. My hot-beds being on a sandy loam, I have found an excellent substitute for specially prepared soil, in the scrapings of the hot-bed yard after the manure has been removed. The leachings from the manure have furnished an abundance of available fertility, and the soil thus impregnated, together with the fine scattering manure, having been raked into piles in June, are in excellent shape for sifting and storage in the fall. For most uses I prefer it to the rotted sod. In case of a clay loam, a proportion of sand should be added in sifting. If beds are located on a stiff clay, this method is not practicable. If the annual scraping threatens to produce an excavation, it is a simple matter to fill it up with suitable soil from elsewhere.

MARKER.

For sowing seed in beds in which the soil is placed upon the manure, we use a very simple marker, shown in the cut, made by tacking to a common six-inch board, narrow cleats at 2 to 4 inches apart, as needed, and making it 2 feet long for convenience. In this is inserted a handle at a suitable angle. By using this from both sides of the bed, the little drills can be made from one side to the other, clear and distinct, and after the seed is sown, by drawing the back of the marker over the rows, the covering is made very even and regular. But usually, instead of filling the bed with soil, we find a profit, both for sowing seed and for "pricking out," in the use of boxes of suitable size, filled with soil, and placed directly upon the manure. Not only can the boxes be moved easily, if greater or less heat is desired, and the bed be more quickly cleared when through with, but by placing them up on work-tables, transplanting into them is twice as rapid and easy as into the bottom of a bed.

Transplanting or "pricking out," repeated two or three times, and root-pruning by drawing a knife between the rows of plants, induce stocky growth and early fruiting, furnishing such plants as soon drive all others from the market. But transplanting a great many thousands repeatedly, becomes a large item of expense, and the most expeditious methods must be studied. My quickest workmen are usually boys 12 to 14 years of age, who work in twos at a narrow table of proper hight, upon which are placed the boxes, one at a time. While the right hand makes a hole, with a dibble 3 inches long, the left picks up a plant from a lot conveniently near, and slips it into the hole already made, when the operation is finished by a downward punch from the dibble on one side, and the thumb and finger of the left hand, just released from its plant, on the other. Working in this manner, two boys transplant a great many thousand in a day. As soon as the boxes are full, they are sprinkled and screened from the full sun for a day or two, and are soon revelling in "pastures new."

Watering, especially in clear warm days, becomes no small task in a large yard of beds, and water should never be carried when it can be made to flow. The best location for a yard is upon a southeast slope, and upon the highest point the cistern or well should be located. If a well, it pays to use, for supplying a large number of beds, some of the smaller wind-mills to raise the water into a tank so high that, with the help of a small rubber-hose, all the beds can be sprinkled quickly and cheaply, without lifting a bucket. The most watering must always be done on clear bright days, when there is also most other work to be done. The same principle will apply to the earth-bins, implements, etc., that they all be upon the upper side of the grounds, so that every move shall be down hill.

If every third bed or frame be omitted in each third row of beds, it makes the most convenient and accessible place for a transplanting table and for storing shutters, sash, and mats, during the day, when they are not in use.

Oftentimes, because of dull sales, or a desire to be ready for an unusual demand, the florist or gardener finds his plants crowding him, and as a freezing night threatens, he has not enough shutters or mats to protect them all. In such cases even newspapers spread over them, and held down, are a considerable protection, or plenty of hay or straw spread over the beds, and held down with boards, will answer excellently. Such a motley yard, of course, would not be regarded as ornamental in a fashionable quarter, but it saves the crop, and the next day sees no sign of the threatened disaster.

Hints on the Adornment of Rural Homes.

BY F. R. ELLIOTT.

Much has been written, and often well written, with regard to the decoration of country homes, but it has been too much the tendency of such writings to give the reader an idea that to have a fine lawn, beds of beautiful flowers, or masses of ornamental hardy shrubs, he must employ a gardener. Our object is to show that to change a place remarkable only for its want of beauty, into one that shall be a pleasure not only to its owner, but to the passers by, there is but little required that can not be done by the owner himself. That there are many excellent and most intelligent gardeners, we know as well as we do that there are a lot of pretenders and charlatans, who, by calling themselves gardeners, bring disrepute to an honorable profession. Unfortunately it is these fellows who perhaps can tell a lily from a hollyhock, that are most likely to offer their services to residents of rural districts, and by their assumption of knowledge and great pretensions, commend themselves to those who do not know that there are gardeners and gardeners. If one wishes to improve his place, and has not confidence in his own ability to make the best use of its natural features, let him avoid all pretenders, and carefully study his own grounds, and consider what he would have them to be in the future. If he has no taste in these matters, or has not given much thought to such subjects, it would be much more satisfactory in the end, to take the advice of some competent landscape gardener, who for a moderate fee, will make a sketch of the grounds, indicate how they may be improved, and lay out the work, showing the places for trees and shrubs, which the proprietor can carry out at his convenience. The adornment of a rural residence or farm yard, that we have in mind, is not such as will require the aid of a gardener in planting, or in keeping after it is once made. Any one who can manage a pasture, can make and keep a lawn, and whoever can properly set out an apple tree or currant bush, is able to properly treat an ornamental tree or shrub. The idea that the beautiful trees and shrubs that adorn the grounds of the wealthy, need some knowledge not possessed by the ordinary farmer, deters many who would gladly surround themselves with things of beauty. If such persons knew, what is the fact, that there are among trees and shrubs, a sufficient number as hardy as the commonest natives, to gratify the most exacting taste, we think that more would be induced to plant them. If one wishes to improve his place, let him begin at the entrance way; the road or pathway leading from the public road to the house, is that which is first noticed by

the visitor, and may be made to indicate the taste and refinement of the occupant of a farm house, as well as that of the millionaire's mansion. As no two places are exactly alike, so no two entrance ways will need to be treated the same. In the sketch, (figure 1), I have shown how a foot-path to a house situated some 200 feet from the

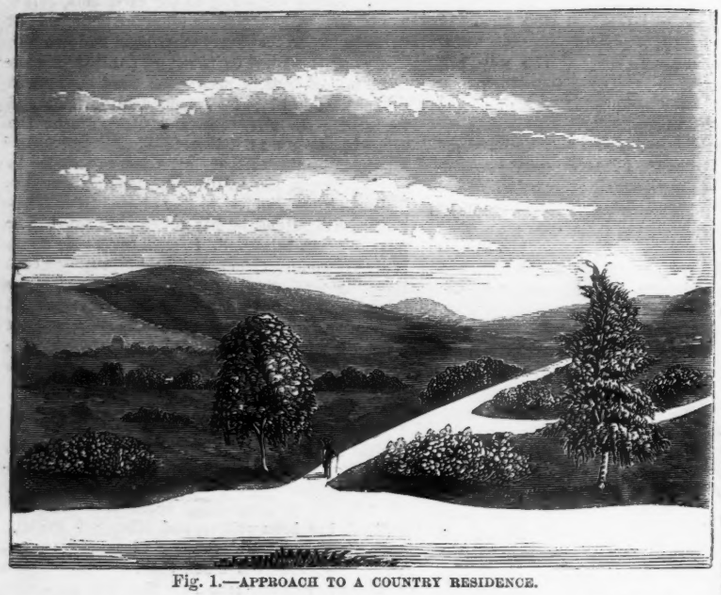


Fig. 1.—APPROACH TO A COUNTRY RESIDENCE.

public road, may be treated with pleasing effect. The tree at the left is a cut-leaved weeping birch, while the group of shrubs at the left, consists of Weigelas of different kinds, a perfectly hardy shrub continuing long in flower, and to be procured at a very moderate price. On the right is a Sycamore maple, and the bed at the right is planted with Remontant (Hybrid Perpetual) roses; but as these are in full flower only in spring, some fine double hollyhocks are intermingled, to give flowers later in the season. There is nothing here but what may be accomplished at a small expense, yet at the entrance to a house, no matter how humble it may be, will be unpretending, in good taste and effective. Between the entrance and the house, it is assumed there is an expanse of lawn, which may be broken or not, as the taste of the owner may decide, by occasional clumps of shrubs, or beds of flowers cut in the lawn; but an entrance thus decorated, may lead up through a plain, well kept lawn, to a house well ornamented with climbers, and be in good taste, without any intervening ornamentation. In the second sketch, (figure 2), I have shown how advantage may be taken of a natural eminence; it often occurs that there is a bold rocky prominence, which needs only a little labor to transform, what might otherwise be an unpleasant feature, into one of beauty. Upon a bluff of this kind is an appropriate place for a summer-house; if there are scattering rocks, they may be gathered here, and by placing earth among them, a foot-hold may be given to plants which will drape the rocks with verdure and flowers. In such situations our beautiful Virginia creeper will be seen to great advantage, as will the smaller leaved *Ampelopsis tricuspidata*, or *Veitchii*; the various hardy species of clematis will show with fine effect, and the grotesque forms of sedums and sempervivums, make themselves perfectly at home. Such an eminence may overlook a smooth pasture bounded by hills, or it may look out upon a sheet of water. But lakes are not for every one, while a level pasture is both beautiful and useful.

The Basset Apple.

The Basset apple is one of those highly popular winter fruits, that one often comes upon in the State of Connecticut, so highly esteemed that the more widely known winter apples on the nursery lists have not been able to displace them. We received the sample from which the illustration was made, from W. D. Hall, of New Haven Co., Ct., one of the best fruit growers in the State. The Basset is a good deal cultivated in his vicinity, and is preferred by himself to all other winter apples. It belongs to the Pearmain family, and resembles the Cogswell apple in general appearance, except that it is smaller. The engravings on the next page are taken from a small specimen.

The size is about medium, roundish oblate, regular. Stem rather short, slender, inserted in a large russeted cavity. Calyx small, delicate, open, set in a rather shallow basin. Skin rich yellow, nearly covered with red, marked and streaked with bright red. Flesh white, compact, tender, juicy, scarcely sub-acid, with a rich refreshing flavor. Core small. Seeds rather small and delicate. Ripe December to February. A handsome dessert fruit of good quality. The tree is said to be a good bearer. It has never been sent out by the nurserymen.

The above comes from our correspondent, "Connecticut," who is not only a successful grower of choice fruit, but has long been a close observer, and has given especial attention to local and little known varieties. When a description of a new fruit comes to us, especially a new apple, we are in doubt whether to publish it or not. If published it adds one more to the upwards of 2,300 described apples, and if not published, we withhold information that may be of interest to many. The fact is, there are in every one of the older states scores, if not hundreds, of apples that have never been carried far from the neighborhood where they originated, and of which no record has ever been made. These in their own localities are held in high esteem, but whether they would be worth anything beyond there is quite unknown. While it seems a pity to ignore a variety quite as good, if not better than hundreds of those already in the books, it also seems injudicious to give a "local habitation and a name" to a fruit, while there are in the books hundreds quite as good, if not better. In conversation not long ago with well-known pomologists, Mr. Charles Downing, who was of the group, asked: "What shall we do with all these local varieties that are springing up everywhere in such numbers?" And it is, to editors, a very important question. Shall we refuse to notice a fruit that is not in some respects better for a given section of country, than any we now have, or shall we place on record every well marked variety of good quality? This accumulation of names has become a serious matter, and it is likely to increase as the love for fruit-culture extends. It seems to us that this is a subject worthy of the consideration of the American Pomological Society. These local varieties of fruit exist; they will, if "good" or only "fair," be disseminated in their own township, the county, or the State, and the question of Mr. Downing, "what shall we do with them," becomes yearly more pertinent, especially to editors.

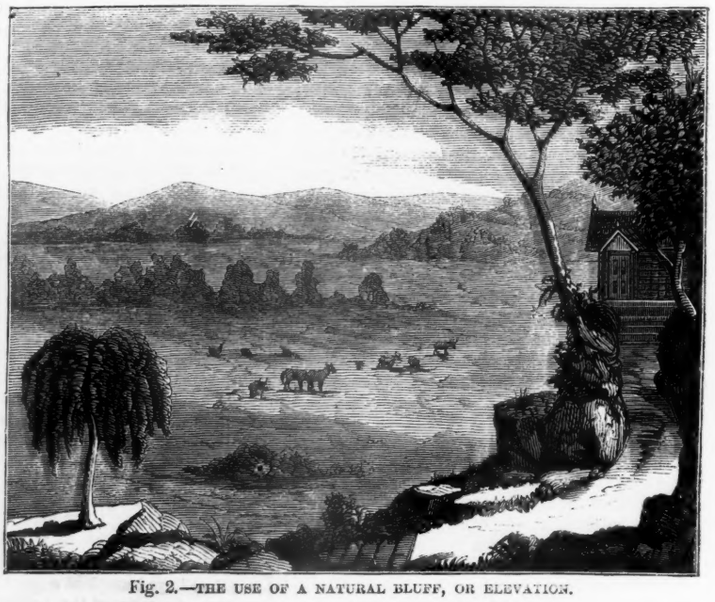


Fig. 2.—THE USE OF A NATURAL BLUFF, OR ELEVATION.

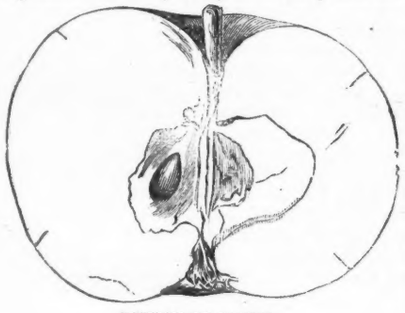
THE COLORADO POTATO BEETLE, the genuine "bug" having appeared last year in parts of New Jersey, Pennsylvania, and in other Eastern localities not before visited, its appearance in full force may be looked for the coming season. The first beetles will come from chrysalids, which have been in the ground all winter. These will lay eggs, and the larvæ from these change to beetles in about a month; this first brood will produce a second, and that a third, which will remain in the ground to furnish a stock for 1876. The vitally important thing to do, is to watch for the first beetles with the appearance of the first potato tops, and not wait until the ravages of hordes call for active measures. Vigilance, whether they appeared last year or not, is the one essential thing. *Search, catch, and kill*, in the beginning. We will talk about poisons and other aids another time.

"Standing Cypress"—(*Gilia coronopifolia.*)

One of the most beautiful of all garden plants is *Gilia coronopifolia*, which is found in some catalogues as *Ipomopsis*, a name formerly given to it, but it not being distinct from Gilia, it is now united with that. From the general resemblance of both foliage and flowers to the well-known Cypress vine, (*Quamoclit vulgaris*), this has received the garden name of Standing Cypress. Though so beautiful, the plant is rarely seen in our gardens, for two reasons; one of these is, it is a biennial, and must be cultivated one whole year in order that its flowers may be enjoyed the next year. It is to be regretted that many really desirable plants are scarcely ever cultivated because they are biennials. We are generally an impatient people, and novices in flower gardening excel all others in inability to wait. Some of these dig up the seeds the next day after sowing them to see why they don't come up, and we cannot expect such persons to wait a whole year for anything. They want plants that will bloom right off and all the time, and after they have flowered all summer in the garden, they must be taken up and bloom all winter in the house. The idea that a plant has ways of its own that must be consulted, never enters their heads. Every considerable garden should have in some inconspicuous place a nursery bed in which seeds of biennials, and perennials also, can be sown, and the young plants cared for during one season; in the fall or the next spring the plants may be set where they are to bloom. Another reason for the infrequency of this *Gilia* is the difficulty of keeping the young plants through the winter. It is not the cold that destroys them—indeed, if much protected they are quite sure to die, but excessive moisture is fatal to them, and it is of little use to try them in a garden with a very damp soil. We have seen them kept very well when set upon a ridge, and if a dry place can be found near a fence, they are likely to do well there, as the fence not only breaks the force of driving storms, but the shade thus afforded prevents alternate freezing and thawing. The surest way is to keep the plants in pots; it is found that small plants winter better than large ones, and if the seeds are sown in August, they will be large enough by cold weather to place singly in small pots, which may be kept in a cool greenhouse or even in a frame. The plant usually grows about 3 feet high, but under favorable conditions it is 4 or 5 feet with finely divided, exceedingly delicate and handsome foliage. The flowers are borne in a long and narrow panicle at the upper part of the stem, or sometimes the flower-cluster branches, in which case the plant does not grow so tall. The flowers are about an inch and a half long, tubular, with five small lobes, of a light scarlet color with the throat and the inside of the lobes speckled with white or yellow. Some two or three years ago we mentioned the receipt of some specimens of the flowers of this *Gilia*, from Mr. P. J. Berckmans, Augusta, Ga., (who obtained them from a friend in Florida), which measured 2 and 3 inches across. Mr. B. procured some seeds of the plant producing these monstrous flowers, and sent us a portion of the seedlings. None of the plants produced unusually large flowers, but they had a greater tendency than usual to branch; on this account our engraving, made from one of these, shows a more branching habit than common. Aside from the brilliancy of its flowers and the attractive character of its foliage, the plant has the great merit of keeping in bloom for a long time. It is found from South Carolina to

STANDING CYPRESS.—(*Gilia coronopifolia.*)

BLUE-GUM.—(*Eucalyptus globulus.*)—(*See next page.*)



SECTION OF BASSET.

BASSET APPLE.

Florida and westward, and is the only species of *Gilia* in the Atlantic States, though in Texas and westward to California the species are numerous, and some of them of great beauty, though none are quite so showy as this.

The Atomizer in Horticulture.

A number of years ago, a contrivance for diffusing cologne-water or other perfumes in a fine spray, or rather mist, was introduced by some French perfumer. Later the apparatus found an application in surgery, for producing a local benumbing of the nerves, by use of the spray of ether, or other highly volatile liquids. After a while the implements were used in horticulture, for the applica-

Fig. 1.—A CHEAP ATOMIZER.

tion of insect destroying liquids to plants. The Atomizer, as it is called, requires a blast of air, which, on a small scale, may be furnished by the mouth, but is usually produced by the squeezing of an India-rubber bag, or by means of a bellows. We have figured contrivances, worked by both the bellows and bag, which have been found useful in

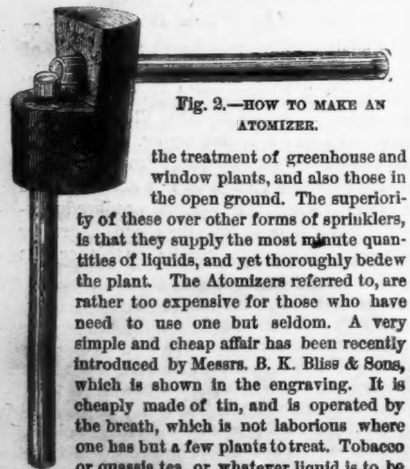


Fig. 2.—HOW TO MAKE AN ATOMIZER.

the treatment of greenhouse and window plants, and also those in the open ground. The superiority of these over other forms of sprinklers, is that they supply the most minute quantities of liquids, and yet thoroughly bedew the plant. The Atomizers referred to, are rather too expensive for those who have need to use one but seldom. A very simple and cheap affair has been recently introduced by Messrs. B. K. Bliss & Sons, which is shown in the engraving. It is cheaply made of tin, and is operated by the breath, which is not laborious where one has but a few plants to treat. Tobacco or quassia tea, or whatever liquid is to be used, is placed in the reservoir, and by blowing through the horizontal tube, it will be thrown in an almost invisible spray upon the plants. Any one handy at such matters can make an Atomizer, although the one figured is so cheap, that there is little inducement to spend much time in making one. There is an upright tube which dips into the liquid, and a horizontal one through which the blast is sent. Blowing across the open end of the upright tube creates a vacuum in that, and the water rises, just as the wind blowing across the top of the chimney, causes an upward draft in the fire-place; the liquid that thus rises in the upright tube, is scattered in very fine particles, or atomized by the blast. The essential point is to have the top of the upright tube just half-way over the opening in the horizontal one. The accompanying engraving (fig. 2) shows how the writer extemporized an Atomizer, to replace a broken one. A large cork is cut as there shown, and two pieces of glass tube inserted at right angles. These fitting tightly in the holes of the cork, can be readily adjusted in the proper position. If a bottle is used for this, the cork should have a groove cut to admit air.

The Rotting of Celery.

BY PETER HENDERSON.

"J. C.," of Ogden City, U. T., wishes me to tell him, through the columns of the *Agriculturist*, why it is that his celery prematurely rots. It may be from several causes—some of which he may be, and others he may not be, able to control. The cause of decay that he may be unable to avert is, that by peculiarities of the season, a rank and succulent growth is made just before it is time to place away the celery in the trenches in the fall, and but a slight bruise given to the leaves or stems, when in that condition, will quickly cause decay. Another cause, and one from which even some of our most extensive market gardeners in New Jersey have suffered the past season is, that at the time of lifting the celery to put it away in the trenches, the ground was very dry, and so continued for some 3 or 4 weeks after, so that the celery in the trenches failed to start roots, it consequently wilted, and then began to decay, instead of starting to grow as it should have done, had the soil not been too dry. Now to avoid this cause of decay, as far as possible, immediately on digging up the celery, it should be at once set in the trenches, and the air as completely as may be excluded from the roots, so that they are kept moist enough at the bottom of the trench to emit roots. When the ground was suitable, I have allowed some of the soil to adhere to the roots of the celery on digging it, this prevents the wilting, and is perhaps the best plan if the time can be afforded, but it makes the work much slower, as almost every root requires to be handled separately, instead of three or four at once, which is the usual way in placing them in the trenches. Another cause of decay, and one of the most common, but one that ought to be avoided, is in digging too early, or covering up the trenches too soon. No date can be given as a rule for either of these operations. Each one must use his own judgment in the matter, keeping in mind that celery should never be lifted until there is danger of its being frozen; I do not mean a slight frost, such as 5 or 10° below the freezing point, for unless very soft indeed, even 10° will not injure it, but such a frost as would fasten it in the ground so that it could not be dug out. Freezing to this degree will kill it. There is no need usually for covering against frost until 3 or 4 weeks after it has been put away, and then the covering should be gradually applied, and of a kind that will lay lightly, such as leaves from the woods, or rough stable litter.

The Blue Gum—Eucalyptus globulus.

BY P. J. BERCKMANS, AUGUSTA, GA.

Every horticultural journal issued on this Continent has, during the past two years, repeatedly given notes on the species of *Eucalyptus*, but, if we may judge from the many inquiries which we receive from the Northern and Middle States, this genus has not been correctly brought before the average amateur tree planter. Last summer a New York paper, in mentioning the Blue-gum, *Eucalyptus globulus*, remarked that, as the trees are said to drive away musquitoes and fevers from their neighborhood, this desideratum is not to be overlooked by the inhabitants of New Jersey; to which a New Jersey paper replies, by recommending this tree for the flats of Long Island. From this it is evident that the character of the genus is misunderstood. The most important requisite, its hardiness, is ignored altogether, and as regards this, we would remark that neither the *Eucalyptus globulus*, (Blue-gum,) or any of the thirty or forty other species of the genus are hardy in Middle Georgia, consequently any experiments tending to acclimate these trees in New Jersey or New York must prove unsuccessful. Many kinds were cultivated in England as early as 1790, but every tree was killed during the winter of 1829. Since then the genus has been discarded in England from the list of hardy trees. Our first experiments were made in 1858, when we planted several species in a sheltered spot in the center of a large tract of wood. Among the lot were *E. pulverulenta*, *E. amygdalina*, *E. populifolia*, *E. saligna*, *E. floribunda*, *E. viminalis*, *E. elata*, and *E. globulus*. Their growth was very rapid during four or five years, except *E. amygdalina*, *saligna* and *viminalis*, which did not survive the first winter. In March, 1863, our last plant died; this was *E. pulverulenta*, which resisted the longest and showed more tenacity of life than any of the others, as it was killed to the ground several times and threw up new and vigorous shoots the following spring. The specimen had attained a hight of some twenty feet, when it finally gave up the attempt. In 1865 a particular friend and zealous amateur horticulturist sent us from North Australia some 15 species of *Eucalyptus*, which gave us opportunity to further test the relative hardiness of these newer species. During the spring of 1866 some forty plants of the different kinds were set out, but every one was killed outright by the first frost the following November. Again, in 1867, the experiment was repeated with the same results; this was sufficient to warrant us in foregoing any further attempt with this genus in this latitude, at least with the object of testing its value for timber trees.

It is well known that the influence of the seabreeze has marked effects upon certain plants, thus many varieties of Figs, which seldom escape being more or less scorched by our winters when planted here in open field, remain perfectly uninjured near Norfolk, Va., when planted on the immediate seashore, although the thermometer there falls some 20 degrees lower than it does here. For this reason some of the Eucalypti will doubtless stand the winter several degrees further North, when having the full benefit of the sea breeze, than they will if planted inland. In the vicinity of Charleston, S. C., and Savannah, Ga., some species of Eucalyptus are reported as successful, but the plants are yet too young to prove their hardiness. I am, however, safe in saying that it is doubtful if any of the species will succeed in the Atlantic States, beyond the zone of the Orange; and further, that the narrow-leaved species are more tender than those with broader leaves. The success of our California friends with this genus as high as the 38th degree, must not lead us here to the belief that we can do likewise in a similar latitude in the Atlantic States. Although latitudes may be similar, the isothermal lines and hygrometric conditions are not.

It is much to be regretted that these trees can never be expected to grow in the Eastern and Middle States, so far as to make permanent plantations, but they, or at least some of them, may be made useful for ornamental purposes. The *Eucalyptus globulus* is perhaps the most desirable, as its growth, when planted in suitable ground, is remarkable. When young and in thrifty growth, its foliage is very luxuriant and of a blueish glaucous tint, hence its name of Blue-gum, but if stunted, it soon becomes rusty and unsightly. Young plants may be used in the same manner and for the same purposes as Cannas, Ferdinandas, Wigandias, Brugmansias, or other large-leaved ornamental plants, now so much appreciated in sub-tropical gardening. The seed should be sown in the fall, using seed-pans and covering very thinly; it germinates freely within a week, if fresh, and the plants must be potted off at once. If properly treated during winter, plants will be of sufficient size the following May or June, to be set in open ground, and by fall will have made a large growth, and give a fine effect in the flower garden.

If our fever and ague districts must for a while remain as they are, producing musquitoes and shakes, because of the impossibility of growing

the Eucalypti, at least these may be made to do duty as stately ornamental-leaved plants, and thus become useful. Our California friends are reaping good results from the introduction of these trees, but it is an unfortunate oversight in those who said so much in favor of this tree, not to have stated that it was not intended for New Jersey or New York, or even the Southern States above the Florida line, as great expectations have been ruthlessly destroyed, as well as the trees by our first fall frosts.

We should add that seeds of Eucalyptus are now easily procured from dealers in New York and California. An ounce of seed of *Eucalyptus globulus*, if fresh, will produce thousands of plants.

[The above bit of experience from Mr. Berckmans is very welcome, as it answers decisively a number who have made inquiries in regard to the Blue-gum. There has been much nonsense published about this tree, not only have the daily papers given the most absurd statements, but the agricultural and horticultural journals have done their share in keeping up the excitement. As to its alleged power of destroying malaria, we have not seen any evidence worthy of consideration. A tincture of its leaves, and other preparations from it, are said to be useful remedies in fever and ague, and that is probably all that there is about it. No fever destroying property is attributed to the tree in its native country. That the tree is of the greatest value in California is a well known fact, and it is likely to be the leading timber tree of that State, and the fact of its worthlessness on the Atlantic Coast is as well established as that of its value upon the Pacific. Mr. Berckmans' experiments, which we saw in progress, are corroborated by others in the Southern States, and the tree has utterly failed even in some parts of Florida. The suggestion to use the young trees for ornamental purposes is a good one; they have been so employed in Europe, and we give on page 101 an engraving from Alphand's work, to show the general appearance of a young and vigorous Blue-gum.—ED.]

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages*).

Home Topics.

BY FAITH ROCHESTER.

Purifying the Blood.

Some persons actually read and believe the medical almanacs and advertisements of nostrums that flood the newspapers. How wisely they talk, these advertisements, about the necessity of purifying the blood; but they would lead the ignorant and credulous to suppose that the only way to get pure blood is to take doses of the particular kind of patent medicine advertised. Many respectable families take it for granted that some kind of spring medicine is necessary to set the human system in working order, as winter's cold gives way before the approach of warm weather: whereas it is only necessary for them to "cease to do evil and learn to do well" in their daily eating, drinking, breathing, working, and playing.

Persons who have learned and pay heed to the laws of health, find no necessity for spring medicines. They are all of the time purifying the blood by their simple daily habits. They aim to make their blood of good nourishing materials, and to "cleanse" it by pure air breathed into the lungs.

It seems to me more and more astonishing that the human body can stand so much abuse, especially in the way of bad air. People shut themselves into such close rooms in winter, especially at night, that it is no wonder that they are driven to all sorts of stimulants to whip up their flagging energies, and no wonder that they are "all run down" at the end of winter. One of the most common mistakes is the supposition that air is pure in proportion to its coldness, so that you have only to open a door into an unheated room, which is itself a reservoir of foul air perhaps, in order to ventilate sufficiently the living room or sleeping room. But the mistakes in diet alone are enough to account for the biliousness that prevails in early spring. A winter diet made largely of fat pork or of hot pancakes saturated with butter or fat, will pretty surely bring some sort of sickness in its wake.

The Need of Acids.

When much fat pork is eaten there will always be a demand for pickles or vinegar, says the report of the Massachusetts Board of Health. The demand for acid is a genuine call of the system, but there is no especial call for the strong acids, such as raw lemons and pickles, if one has from day to day the proper supply of moderately sour fruit. Half of the doctors would find their occupation gone if apples were freely used as an article of food. Fruit has never done us the good it might have done, because it has been eaten at improper hours, between meals, or in the evening. It has actually been turned into a foe to good digestion by the processes of pickling and preserving. The old-fashioned "pound for pound" preserves are too sweet to serve the purpose of acid fruit, and too rich to have the nourishing effect of juicy, sweet fruit. They are simply sweetmeats, to be eaten with caution. Canned fruit is excellent, but fresh fruit is best whenever it can be obtained. The good effect of fresh fruit is often spoiled by the excess of sugar used with it.

When there is a craving for sour food, for pickles or for lemons, it is generally a strong indication that the system has a real need of acids, and lemons or vinegar are sometimes the best medicine to cure biliousness and restore a failing appetite. A year ago I saw a child pass through one of these poor spells. He lost his appetite, and could not bear the sight or smell of food, until he caught sight of a dish of dried apple sauce, and then he was possessed with a desire for some of the juice. This seemed to refresh him, and he ate, for his next meal, bread soaked in the juice of stewed dried apples. After that canned tomato, cooked with bread, helped forward the cure. Before this ill turn, he had, for a few weeks, lived almost entirely without fruit, contrary to his usual habit.

It is a common mistake to use fruit at the table only in the form of sauce at the evening meal, or encased in rich crusts as pie for dinner. In the latter case the ill effect of the pie-crust is often greater than the good effect of the fruit inside the pie. As for the fruit sauce on the tea-table, it is better than a heavy supper of meat, but there is some sense in the old saying that "Fruit is golden in the morning, silver at noon, and lead at night."

Perhaps any kind of fruit or vegetable may be used to excess, or in too large a proportion as compared with the rest of the diet. Certainly acids should be used in moderation, especially the strong kinds. Because the juice of a lemon may be an excellent cure for biliousness or flatulence or other disease, it by no means follows that school girls can thrive upon their daily use. In former days, when pale and slender maidens were in fashion, it was not very uncommon for silly girls to try to reduce their weight and ruddy hue by frequent sips of vinegar, and many a feeble woman, and many an early death has been the result of such tampering. A variety of vegetables and fruit, well-cooked, and eaten as appetite calls for them, will satisfy the natural demand for both sour and sweet food.

Discouraged Mothers.

One of this numerous class writes me a letter. She can not get any *time* to devote to her children. Her little girls are almost entirely without a mother's care, she says, and her boy of nine is already almost lost to her. Society—which means the people congregated at the village store, if not the crowd in the bar-room, as well as the Sunday and the day school teachers and pupils—society has pretty much taken the education of her boy off from her hands, while she has been "slaving" at the dish-pan and wash-tub and sewing-machine in order to supply the most material wants of her family. She imagines that the case is quite different with me, and wishes to know how it is that I am able to keep house, educate my children, and write for the papers. I can not tell her "all about it," and I do not propose to invite the public to take a survey of my household, certainly not, while my hired girl, who has been away on a mission to the sick ones of her father's family, still delays her return beyond the fourth week of absence. I only aim to live along from day to day, while everything has a tendency to "gig back" to original chaos. While I am trying to bring one end up even, several others are falling behind. Every morning I have to begin with a determination to try above all things to be cheerful and contented with the little that I can accomplish. Nature alone is not equal to the task, and I often fail sadly. My correspondent writes she imagines that I read a good deal. This is not the case. I read very few books, but by keeping reading matter lying all around the house, I fill in some odd minutes; here a little of one thing, and there a little of another. I dare not begin a novel or long story, much as I desire to read "Middlemarch," and to finish "The Newcombs," begun ten years ago. Let us be thankful for the serial stories in the papers and magazines, for we may surely take time to read the few chapters that come to us each week or each month. Reading them in this way, by regular installments, we are not likely to make novel-reading a dissipation, and in such reading we may find not only rest for a wearied mind, but help for our manners and general conduct of life, provided, of course, that the stories we read are such representations of life as win us to seek noble living. I bless the good writers of good fiction, and I know that my present life is made pleasant in part by the companionship of the heroes and heroines who act their parts before me from week to week, as I follow the fictions (often the truest truth in a higher sense) of the best story writers in our papers. Sometimes there comes a sort of lull in our busy lives when a serious book gets a chance to be read through; and books that are in the line of our daily study and work will somehow get read, simply by consultation on different points, perhaps. A mind eager for knowledge will manage to pick up supplies somehow, if there is any nutriment of this kind near at hand. I write all this because my correspondent mourns that mothers, who are also housekeepers and hard workers, cannot get time to read. Besides, let me tell her, a change must come some time. These babies will not be babies always. Then, let us hope, there will be some opportunity for us to indulge our literary and artistic tastes. In the meantime, let us enjoy these babies who will not always be babies. There is nothing in art so wonderful and so beautiful as a living child. Your own boy is as funny as William Henry, if you use your eyes and ears and *heart* to discover it, as Mrs. Diaz uses her's.

So all the advice I can give to weary and disheartened mothers is, hold on as best you can. Be sure that it is *best* as it is, till something better comes. *Make* the best of it anyhow. Go to bed early whether the clothes are all mended or not. For your children's sake as well as for your own, get plenty of sleep. And pray the prayer of faith.

More about Milk for Babes.

In experimenting with young babes, who are deprived of mother's milk, or who are weaned early, it may be best to run the risk of having the mixture of milk and water a little too rich rather than too much diluted at first. If the milk is too rich, it will be thrown up from the stomach, which will serve as a hint for more water in the mixture; but if it is too poor and thin, there may be no clear sign (to unpractised eyes) of the fact, until the infant has been considerably injured by gradual starvation, or until obscure and troublesome diseases have been induced. It is further said that if the milk is too strong, indigestion will follow and the child will be injured in health. When particles of curd pass unaltered through the bowels, a milder or lower grade of food should be given. If there is constipation, put in more cream or increase the richness of the milk. Cow's milk has a larger proportion of casein, or cheese, than mother's milk, and to make the proportions of cow's milk right for a young babe, in this respect, the milk should be diluted until it is eighteen parts water to ten parts milk. This would not nourish the babe properly, however, as there would be too little but

ter in the mixture and too little sugar. For this reason it is recommended to set aside a quantity of milk, and after four or five hours remove the upper third, which is said to contain fifty per cent more of butter than the ordinary milk of the cow. This

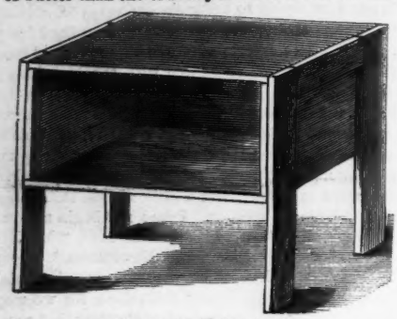


TABLE MADE FROM A BOX.

use for the infant's food. The "strippings" (or the last pint milked from the cow, kept separate from the rest,) would answer the same purpose. There should be even a large proportion of cream (or the butter of the milk) in the food of the babe during the first two weeks, beginning with the use of the upper eighth of the milk set to rise. At first there should be used only about a third as much of this creamy milk as there is of water, which should be very pure and *soft*. For sweetening, loaf sugar is recommended, in the proportion of a teaspoonful to a quart. Too much sweetening will cloy the appetite and injure the digestion. The milk should be heated by putting the bottle in warm water. One hundred degrees Fahrenheit is the proper temperature, but the cheek will be a sufficient test after the first experiment.

A Table Easily Made.

Take a wooden box that has sides of a convenient size for the desired table, and choose one of its sides for the top of your table. Get four narrow pieces of board, (flooring or siding will answer if strong enough), as long as the desired hight of your table. Nail these at the four corners of the table, two on each end. Then nail pieces of the same kind of board across each end of the box, (at the top of your table when set up), filling out the space between the legs, so that the ends of the table may have straight sides and even corners. Set it upon its legs and you have a table with a shelf underneath. Cover it with a large table cover, or drape it with calico or muslin and cushion the top like a toilet table. Such a table is very convenient sometimes in a sleeping-room, where more closet room is needed. I have one that serves me well for a place in which to keep extra bed-covers.

An Adjustable Table.

While the sewing-machine saves work, it also makes work, and the labor of cutting, basting, and preparing the articles for the machine is one for which various aids have been contrived. Ordinary

Fig. 1.—"UTILITY" TABLE AT HALF HIGHT.

tables are much too high for sitting at work, and lap-boards, with and without legs, are much in use, but the inconvenience of these is manifest if one has to rise frequently while at work. Recently what is called the Utility Adjustable table, made by Lambie, Sargent & Co., N. Y., has been brought to our notice, which appears to be so useful an affair that we wonder why it, or something like it, has not been made before. It is essentially a strong table which can be at once changed from 22½ inches to 28½ inches high, with two intermediate points of 24½ and 26½ inches, at which it may be adjusted. When not in use, the table if desired, may be folded up and set away, taking up but little more room than a lap-board. The tables are made in various styles, from those with a white-wood top stained to resemble black-walnut, to the more elegant ones of rose-wood and black-walnut, but in all the mechanism is the same; this is simple, strong, and effective, and will be understood by reference to the illustrations, where fig. 1 shows the table at about half its full hight, and fig. 2 the underside of the table as folded for placing away or for transportation. The legs are hinged to cleats on the underside of the top and are united in pairs. When set up, a brace with a hinged joint, one end of which is fast to the top and the other to the legs, keeps the whole perfectly firm. Each leg consists of an outer and an inner section, the former sliding against the other. The table being in the position in fig. 1, is raised to a higher point by merely lifting the top. By means of a clevis or clamp on each leg, which catches against a small iron knob, the top is held at the required hight. These clevises are ingeniously self-acting, and allow the table to be adjusted with great ease. The legs are remarkably strong, being made of 20 layers of wood glued together and bent

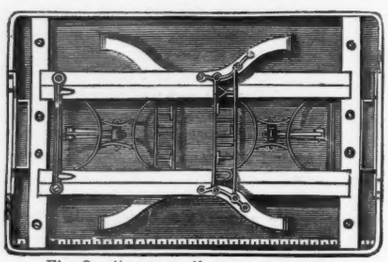


Fig. 2.—"UTILITY" TABLE FOLDED.

into shape. As convenient accessories, there are a yard-stick beneath the top, (shown in fig. 2), that can be taken out and replaced without trouble, and a small drawer at each end of the table to hold spools and other small articles. While intended primarily for a lady's work-table, the inventors properly suggest that many other uses may be found for it, especially as a reading or study table for small children, and it would be a very useful affair for the bedside of an invalid. One of our associates informs us that he has such a table, and finds that its usefulness is by no means confined to the ladies of the house.

More Celery Wanted.—Cooking It.

We have often had occasion to state that the table of a mechanic, or day-laborer in a large city, presents a greater variety than does that of many a wealthy farmer. Take celery, for instance, used by almost every one in the cities, while comparatively few tables in country or village are ever supplied with it. Celery is an excellent addition to any dinner-table, and were its merits, and the ease with which it is cultivated, generally known, it would be in quite as common use as beets. At the proper season we will, as usual, give directions for growing it. It is most commonly used raw, and eaten with a little salt. It is a delicious relish thus eaten, but it makes an excellent dish when cooked. At the better class of restaurants, it is not rare to find on the bill of fare, Cream of Celery. A bowl of this, eaten with bread or crackers, is a delicious and nutritious lunch, with nothing else. This cream of celery is a diluted form of purée of celery, used as a sauce for game. It is made by cutting white celery fine, and stewing with a little water, pepper, and salt, in a covered dish, until it will form a pulp, then milk is added, or three parts milk and one of cream, boil for a few minutes, and pass through a sieve, rubbing through all but the coarser parts of the celery. Heating again, and thickening with a little flour, stirred up with cold milk. If milk is used without cream, then butter may be added. At home, besides the above method, we more frequently cut it in pieces, cook it soft in water, pour off the water, and add abundance of sauce, made of cream and a little flour, or drawn butter when cream happens to be scarce.

Another Use for Old Cans.

In January last a number of illustrations were given of the ways of utilizing fruit cans that have been emptied. It seems that the subject was not exhausted, as a correspondent, whose name we have mislaid, sends us a sketch to show how a neat little window basket may be made from one of these cans. The sides of the can are cut down to within an inch of the bottom in strips (fig. 1) as wide as one fancies. The tin of which the cans are made is rather thin,

Fig. 1.

and may usually be cut without difficulty with a pair of strong common shears. A ring of stout wire being provided of the size desired for the top of the basket, the end of each of the strips is turned over it, placing these at equal distances apart, as shown in fig. 2. It should be painted brown, or some neutral color, and we may here add, that boxes, baskets, etc., to contain plants or stakes or trellises to which to train them, though almost always painted green, are in much better taste when of some unobtrusive color. The beauty of the brightest foliage is quite destroyed when seen in contrast with a box or basket of a window-blind green. Of course wires will be provided to hang the basket, and if it be lined with moss, any suitable window-plants may be planted in it. It does not need expensive plants to fill a little window-basket. One of the most interesting things of the kind we ever saw was filled with a few clumps from the woods of moss, the leaf-mold beneath the moss and the plants that naturally grow in such places, chief among which was the little partridge-berry or twin-berry (*Mitchella*), a bit or two of Prince's Pine or Pipsissewa, and a few other humble evergreens.

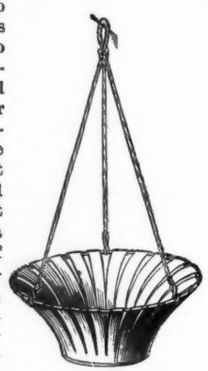


Fig. 2.

Some Questions in Etiquette.

A lady writing from Newburgh, N. Y., says: "Several questions have puzzled me of late, and I write to ask you if you thought it worth while to answer them. 1st. Last summer a lady from the city was staying a few weeks with us; she begged to have her coffee in 'the small cups,' teacups, the large cups were only used in her kitchen at home. Please tell me if small cups only are fashionable.... 2d. A friend of intelligence, culture, and refinement visiting us a few days, stopped after she had risen from her chair at the table, and took her spoon from the saucer, where we thought it ought to be left, and placed it in the cup, now can you tell me the right of this matter? It was a new idea to us. ....3rd. In leaving the table, should the chair be left where it is when the person rises, placed under the table, or set back?"

To answer the first question, we may say that the "lady from the city" was guilty of a gross breach of good manners. Persons visit for a double object: one, to please themselves, and the other to give pleasure to those they visit. The way to give pleasure to those we visit, is to adapt ourselves to

their ways, and to accept their mode of life without the slightest hint that it might be different. If persons can not leave their own home behind them when they visit, they had better stay at home. We can conceive of nothing more rude than for a visi-

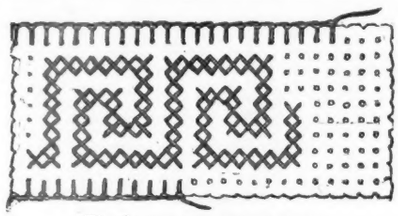
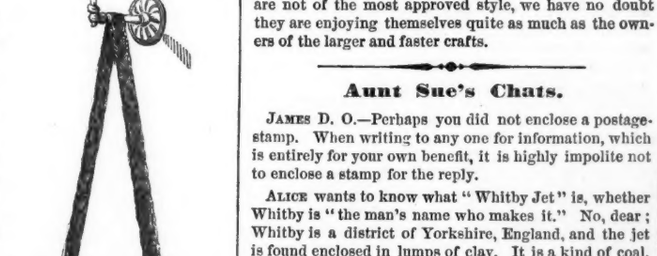


Fig. 2.—ROMAN-KEY PATTERN.

tor to ask for a change in the table arrangements, or to suggest that she has things different at home. If there is such a thing as a female "snob," that "lady from the city" is one. As to the question of cups, where coffee is taken at breakfast, large cups are in general use, and it is only for after dinner coffee, which is served very strong, either at the table as the last thing, or in the drawing-room after the company have left the table, that small cups are "fashionable." In this case the coffee is taken semi-medicinally to relieve the sense of fullness that is often experienced after a hearty meal.

We have now reference to those who live in what is called "style." The great majority of people do not have coffee after dinner.....To answer the second question. We think there is no regular rule with regard to leaving the spoon. We have heard that in old times placing the spoon in the saucer, was an indication that another cup of tea was desired. Common sense would dictate to leave it where it was last placed. That there is any prescribed method of leaving the spoon, is as to you, "a new idea" to us.....3d. The remark about conforming one's self to the ways of the family visited, applies here. Where there are waiters, it is customary to leave the chair as it is when the person rises from it. Any sensible person in visiting will note what is done by the family and do the same. All matters of etiquette should be founded upon common sense and kindly regard for others, and the putting on of airs, and telling how differently they do at home, shows that visitors who do this have not learned the first principles of good breeding.



THE BOYS' REGATTA.

Fig. 3.—CATCH-ALL.

BOYS & GIRLS' COLUMNS.

A Regatta on Ice.

Did you ever see an ice-boat? Not a boat that carries ice, but one that sails on the ice. It is made with iron runners much like skate runners, of course placed so it will not readily upset, and the hull or body of the boat is a mere frame work, made as light as possible and yet be strong enough. These boats have rudders and masts, and spread a great deal of sail. With smooth ice and a good wind, how they go! At some of the towns upon the Hudson River, the people use ice-boats a great deal. The river is a very wide one in most parts, and it keeps frozen for a long time, and is a particularly good place for such boats, which are used to go from place to place or for pleasure sailing, and sometimes they have races, or regattas, which, by the way, is an Italian word, now much used for a public boat-race of any kind. It is very exciting to see several of the large boats of this kind skim over the ice with the swiftness of the wind—whew, how they fly! The sport is not free from danger, as a weak spot in the ice, or running foul of some obstacle, makes a sad wreck. The boys in the picture have evidently seen a race of this kind, and are amusing themselves with a regatta of their own, and though their *sails* are not of the most approved style, we have no doubt they are enjoying themselves quite as much as the owners of the larger and faster crafts.

Aunt Sue's Chats.

JAMES D. O.—Perhaps you did not enclose a postage-stamp. When writing to any one for information, which is entirely for your own benefit, it is highly impolite not to enclose a stamp for the reply.

ALICE wants to know what "Whitby Jet" is, whether Whitby is "the man's name who makes it." No, dear; Whitby is a district of Yorkshire, England, and the jet is found enclosed in lumps of clay. It is a kind of coal. But jet is also found on the Continent of Europe. The Whitby jet is often imitated with what is called ebonite, or vulcanite, which is a very tough material prepared from India-rubber; black glass is used as an imitation of jet, and compounds of other kinds are made to resemble it.

F. M. S.—I never "saw a shooting fish," but I have heard of him. It is a native of the West Indies. The fish has a hollow, cylindrical beak. It derives its name from the curious manner in which it procures its food. When it sees a fly, or any other insect, which it fancies for dinner, sitting on a leaf, or sailing upon a chip, the fish swims away to a proper distance, and then, with amazing cleverness and dexterity, he ejects from his tube-like mouth a drop of water, which is so well directed and so swiftly shot forth, that it never fails to knock the insect into the water, and the fish darts upon its prey and eagerly devours it: another instance of the diversified modes in which creatures procure their food.

How to Make a Catch-all.

Some clever person has contrived a use for broken goblets. They were so popular near last Christmas, that crockery stores were beseiged for broken goblets, and when none were left, it is hinted that some store-keepers were so obliging as to break them on purpose. Here you have a picture of the fractured article—the bowl and the foot. Of course you all know how to make a pincushion of the base of the glass; and now I am going to tell you how to utilize the upper part. Take a strip of silver perforated card-board, nine holes deep, (cutting it through the first and eleventh row of holes). Measure the top of the goblet, and allow the strip to lap over one or two holes. Fit it snugly. Now work upon the card-board, in any colored worsted you like, the "Roman key," (fig. 2,) or any other pattern you choose. When worked, join the ends, leaving the card in the form of a hoop, which goes snugly over the top of the tumbler. Then take it off, and button-hole each edge of the hoop with the

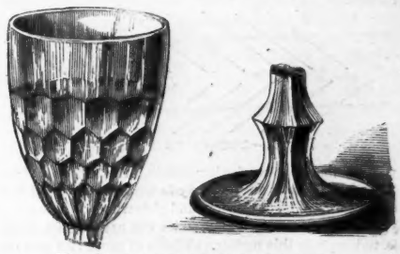


Fig. 1.—MATERIALS FOR CATCH-ALL.

worsted. Crochet through the lower row of button-hole stitches, narrowing at each side, every round, until tapered down to a point. Then crochet an edging in the upper row of button-holeing, which must stand up beyond the edge of the glass. Make a little tassel of worsted and fasten it to the point. Now crochet a strip for a handle, about six and a half fingers long; put a tassel on each end. Fasten one end on to the perforated card-board just over the joined end, allowing the tassel to fall just below the lower edge of the card-board; then fasten the other end of the strip exactly opposite. It is now ready to receive the glass, and will appear as in fig. 3. Hang it up by your bureau or some other convenient place, and you will find it very handy to receive burnt matches, bits of thread, paper, etc. It has one advantage over most reservoirs of the kind, as when emptied you can wash the glass and make it as sweet and clean as ever.

More About Puzzle Pictures.

The picture No. 440, given in Nov. last, was so very easy, that we did not think that any one could help finding it out, and we are quite surprised that some have written us, asking for an explanation. There are two principal kinds of puzzle pictures: one in which the concealed view, or the puzzle portion, can only be seen by turning the picture, so that it will be bottom up, or so that one side or the other will be top; and another, in which certain strong lines first catch the eye and prevent it from seeing the puzzle part, which is less conspicuous. In the Nov. picture you have only to turn it so that the right hand side of the page will be the top, and you will at once see that what before looked like a bridge is a straw-hat with a broad band around it; the road becomes a vest, and the face of a man beneath the hat is made up of ——, but we will let you have the fun of finding that out, and you will see that the artist who drew it showed no little ingenuity in working out the parts. "Jack's Garden" last month needs to be turned in a similar manner, when the hot-beds become the windows to "The House that Jack Built," and all the other parts, when seen in that position, appear quite different from what they did before. Of the other class of pictures,

No. 442.—PUZZLE PICTURE—A FARM SCENE.

no turning or change of position is required; the artist cunningly leading the eye away from that which but for this trick of his might be readily seen. Let us show you how readily the eye may be deceived. Look at the simple diagram fig. 1, and see whether the upright lines are parallel or not—no doubt most of you

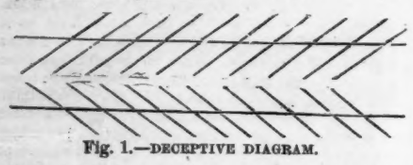


Fig. 1.—DECEPTIVE DIAGRAM.

will say that they are farther apart at the top than at the bottom. There is another way in which we showed this seven years ago, but the boys and girls who saw it then, are young men and women now, so we will use it again as fig. 2, to illustrate this matter. Which of those two parts of circles is the larger? You will very likely say the lower one. Measure it, or what is better, take a thin piece of paper and draw the outline of one, then place this over the other, and tell us how much the difference is. There

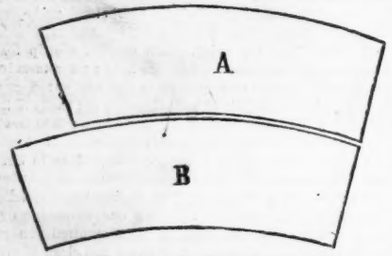


Fig. 2.—WHICH IS THE LARGER?

are other ways in which the untrustworthiness of the eyes may be shown, but these will illustrate the fact that things are not always as they seem. We give you one more puzzle picture, and allow you to find out for yourselves to which class it belongs.

A Look at Some March Flowers.

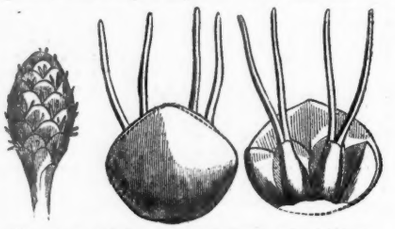
Of course the boys and girls who live in the Southern States, and those upon the Pacific coast, have not been watching day after day to see the snow disappear, as have those who live in the colder parts of the country. Our children are scattered so far north, south, east, and west, that when I make a talk that is seasonable for one part, it is too late or too early for another. If we talk about March as it is all north of Virginia, we shall only recall what happened to the boys and girls south of that a month or more earlier. Yes; you in Georgia and California, and such places, have had your spring, while you in Florida and Texas hardly know when winter ends and spring begins. Well, you of course know that in the Northern States the snow must go before the flowers will come. And the very first flowers of spring seem much more precious than the later ones; we only find one here and there, while later they abound everywhere. If I were to ask you, master, or miss, which is the earliest wild native spring flower, what would you say? No doubt many would answer the Snow-drop, as they have read of that blooming through the snow. But that is not wild in this country, and is only to be found in gardens. There is the beautiful May-flower, or Trailing Arbutus, which is some seasons very early, but there is something earlier than that, for in years when the Trail-

Fig. 1.—ALDER FLOWERS.

ing Arbutus is early, my plant is still earlier. Earlier than the little "Whitlow-grass," which is not a grass, or the small Saxifrage on the dry hills. Earlier than anything I can think of except the Chickweed, which will bloom whenever the snow melts in winter and allows the sun to fall full upon a patch of it, then its little white stars will open as smilingly as if they were not to be frozen solid the next day. But although the Chickweed is so common, it does not belong here, but is a stranger, though so thoroughly at home that you would hardly suspect it. The earliest native flower that I can think of is the Alder. You all, or at least all of you who live in the country, know the Alder, which is so common on the banks of streams, where it forms thick clumps. Every boy who has been a fishing knows the deep holes shaded by alder bushes, where he is pretty sure to get a bite. I say that the Alder is the earliest, but the Hazel nuts come close to it, but where I live the Alder is just a little ahead. Now if any of you know of any plant in the Northern States that opens its flowers earlier in spring than the Alder, I wish you would tell me what it is. I don't mean to say there is none, only I don't think of any. You "did not know that the Alder had flowers?"—well, that is what I supposed. I have known many who were not boys and girls, but men and women, who had lived among trees all their lives, who did not know that the oaks and hickories, the alders and hazels, and many other trees and shrubs bore flowers. No flowers! why, what do you call those clusters swinging in the March wind upon every Alder-bush long before the leaves come out? "Oh, those are tags."—Yes I know that is the name by which they are called in many places, but they are really flowers. You think that they are not flowers because they are not bright and showy, but while many flowers are of the most beautiful forms and colors, there are many on very beautiful plants that make scarcely any show. You must remember one thing, that the use of the flower, all that it is made for, is to form seed from which other plants may grow, and if it is best for the flower to be bright and gay it is so, and we admire it and say "beautiful," "lovely," but if the flower can do its work just as well in drab or sad colored clothes, as these of the Alder, we may not say "lovely," but we can say "beautiful," because it is doing its duty and serving the purpose for which the Creator designed it. Now, the reason I called your attention to these early March flowers of the Alder, is that you may see how beautifully they are arranged for their work—that of seed-making. You all recollect how a lily looks, as that is such a large flower and so showy that if seen once will always be remembered. You recollect there are first the leaves of the flower, (*petals* is the proper name), those that are so pure in the white lily, and so gay in others. Just inside of these are six slender stalks, each with a little pouch or case at its top that dusts out a dark colored or yellow powder, which shakes off upon your clothes or gets upon your nose if you smell too closely of the lily. These are the *stamens*, the powder is *pollen*, and the little cases that hold, or rather shed the pollen, are the *anthers*. Right in the middle of the lily is a stouter stalk than those of the stamens, with a sort of knob on top and a larger bulging portion at the bottom, which after the rest of the flower falls away becomes the seed pod. This bulging part is called the *ovary*, the stalk the *style*, and the knob at the top the *stigma*, and altogether the *pistil*. Now, the curious thing about it

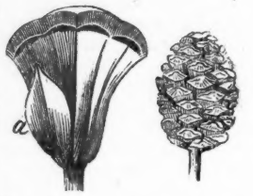
Figs. 2 and 3.—SCALE OF ALDER TASSEL.

is, that unless the pollen of this or some other lily falls upon the stigma, the ovary will have no seeds. It has when the flower blooms the beginning of seeds, but unless these are made to grow by the pollen, they will come to nothing. Now the pistil is a very important part of the flower, and so is the stamen or its anther that produces the pollen. These are present in some form or other in every flowering plant, sometimes as in the lily, both kinds in one flower, but sometimes the stamens are in one flower and the pistil or pistils in another. Our Alder tags look very unlike lilies, but let us see if these seed-making parts are there. In figure 1, *a*, you see some Alder "tags" as you call them, but botanists call them *aments*. They look something like caterpillars. Examine them closely and you will see that they are made of separate parts upon a slender stem. Each one, as you look at it, especially if you have a magnifier, is a sort of scale like figure 2; pull off one carefully and turn it over, look at it with a glass, and see three little flowers under each scale, one of which is seen very plainly in figure 3, with its four stamens. So each tag or ament has a great many flowers. But you do not see the pistils; you must look in other flowers for those. See at *b* in figure 1, the little cones that very few people notice; these too are made of scales, but closer together than the others; in figure 4 you have one magnified, and you can see the little thread-like styles sticking out from under the scales. Cut the cone apart, each scale will be like figure 5 on the outside, but turn it over as in figure 6, and you will see two ovaries, each with two styles. So you see the stamens and pistils are far apart, but as the March wind shakes the "tags" the pollen is quite sure to get carried to the pistils, and then each ovary grows to form a little nut with one seed in it. The scales of this cone grow too, and become thick, as in figure 8. You will probably find old ones upon the bush



Figs. 4, 5, and 6.—FERTILE CONE AND SCALES.

from which the nuts have fallen, but if you take one when ripe in the fall and cut it apart, you will find beneath each scale, now very thick and woody, as in figure 7, a couple of little nuts, like that shown at *a*. Now, I think that with the help of these figures and this description, you will be able to see that the Alder has flowers, and very interesting ones, too. I wish you to notice that flowers all have the same work to do, to produce seeds, that the stamens and pistils are the parts engaged in doing this, and all the rest of the flower is of comparatively little importance, and that while the forms of flowers are wonderfully varied, the same general plan runs through all. When you are taking your rambles, do not notice the showy flowers only, for there are many quite as unpretending as the Alder that will be found on close acquaintance to be quite as interesting as their more brilliant sisters. Later, when the birches hang out their tags you will find that their flowers are arranged very much like those of the Alder. The hazel aments, while they at first sight appear much like those of the Alder, will on examination prove quite different, but I have not time to point out what the difference is.



Figs. 7 and 8.—CONE AND NUT.

THE DOCTOR.

How Jamie Carried a Whole Barrel of Apples.

Jamie, though only 11 years old, is quite strong for his age, for with a "square hold" he can lift 100 pounds. Still, with all his strength, he was quite confounded the other day when his mother said, "Jamie, there is a barrel of apples up stairs, and I want you to take it down cellar; it is coming cold, and the apples will freeze if left there."—"Why, mother, I can't do it," he answered.—"Oh, I am sure you can if you try," was the reply.—"But," he said, "it will break my back to try." His mother told him that she would not ask him to do anything impossible, and that she hoped he would never say "no" to anything but to a temptation to do a wrong or mean thing. Jamie went up to where the barrel of apples was, and looked at it, then he moved it a little way, and then tried to lift it, but try as he might he could not raise the edge of the barrel from the floor. Then he sat down and thought over the matter; here were the apples, and they must go down cellar, and he was to do it, but *how* to do it was what puzzled him. Just then a basket—a peck basket—caught his eye, and the puzzle was solved. He took the basket, filled it with apples, and carried it to the cellar; there he took the apples out, laying them on some boards, handling so carefully all the while as not to bruise any, and then went back for another basketful. After working industriously for a while he had the great satisfaction of seeing the bottom of the barrel, and he thought it was the best looking part of the barrel; then it was but short work to take down the empty barrel and place the apples back into it. "I've done it, mamma, I've done it; I have taken the whole barrel of apples from the garret to the cellar."—"I knew you could when I sent you to study this lesson," said his mother. "Lesson! what lesson!" But instead of telling him, she preferred to let him find out for himself. Jamie at first thought his mother wished to teach him to contrive a way out of difficulties, or not to be scared at what seemed an impossibility. These lessons, though important, were not what his mother had in mind. You may be sure that Jamie went to bed tired that night, but after he was supposed to be sleeping soundly, he called out: "Mamma, I've got it. I know why you set me at that barrel of

apples. I've got a barrel full of bad habits that I have been carrying around all this time. I've wanted to get them out of the garret of my head, and put them in the cellar, under my feet, and I've looked at it, but the job was too big. Now I am going to try carrying *a peck at a time*. To-morrow I'm going to take that bad temper of mine and pitch it into the cellar where it belongs. Whenever the anger comes I'll pitch it down quick. If I do this every day, I guess in this new year I can put the barrelful of bad temper, bad thoughts, and angry feeling all down. Mamma, don't you think if I pray every time these bad feelings come, that God will help me and give me strength to get rid of them?"—"Yes, my dear child, He never turns away any who ask him, and Jesus said 'Ask and it shall be given.' After a while you can take a little basket in *each* hand, that is two or three faults, found out and taken down, but *begin* with a peck at a time and you will soon grow stronger and more able to contend against bad habits and bad manners." Jamie went to sleep feeling quite happy, and in the morning when he got up he prayed earnestly. He had not been up an hour before his brother George did something that displeased him, and he began to get angry. Instead of speaking cross to his brother, he said to himself, "here is this barrel already open, but God will help me to conquer this fault; here goes down one peck from my barrel," and he turned around and spoke so kindly to his brother that he, expecting an angry reply, wondered what it all meant. But we cannot follow Jamie's attempts to get rid of his barrel of faults—one peck at a time. It need only to be said that he kept trying, and "as a soft answer turneth away wrath," he so treated George that his temper was softened and his selfishness abated, and he too began to put down his faults one peck at a time, and the two brothers from quarreling became loving. It may be that some boy or girl who reads this can see that the effect of Jamie's example need not be limited to his brother George, and may be encouraged to try to empty that barrelful of bad habits, *a peck at a time*.

Should Boys go to College?

FARMERS' BOYS AND OTHER BOYS. *Editor of the Agriculturist* — DEAR SIR: — My friend Sammy and myself have had a great deal of talk about going to College. Father says, that as I am to be a farmer, going to College will do me no good. Sammy's father is a mechanic, and says the same about his son. Knowing that you have been to college, and know all about college matters, it was agreed between us that I should write to you for your opinion, as that would go a great ways with both our fathers.

Very truly, MARTIN.

We'll try. For short, we would say, every boy *ought* to go to College, and we came pretty near adding, every girl too, but we will only say that the girls ought to have for themselves what would be equivalent to College for the boys. But what is a College? Why, it is only a high *School*, where the students go beyond what is usually studied in the High Schools, Academies, and Seminaries. The Colleges have a regular thorough course of study. They require a certain amount of previous advancement to be able to enter them, and the students go through a Freshman year, a Sophomore year, a Junior year, and a Senior year, and if they pass all the examinations, they receive a Diploma conferring the degree of "Bachelor of Arts," (A. B.) Usually, if they study or follow literary pursuits for three years after leaving college, they get another degree of "Master of Arts," (A. M.) The college study is very thorough, (or ought to be,) and the young men are trained not only in the higher studies, but in writing and speaking, while the association with the professors (teachers) and others, all of whom are well educated, tends to refine and cultivate their minds. Most of the colleges require (and all ought to) much time to be spent in studying Latin, Greek, and the higher mathematics, such as Algebra, Geometry, Trigometry, Calculus, etc., also Chemistry, Mineralogy, Geology, Astronomy, Botany, Moral Philosophy, Moral and Political Economy, Logic, etc.

But "stop, stop," we hear our young friends Martin and Sammy say. "What's the use of all this to farmer boys and mechanics?"—Well, a great deal more than we can tell you in this short article. While these various branches of knowledge will do a great deal to make one happy in any station of life, the STUDYING of them is of vastly more importance. By this we mean the *training*, the *discipline* of the mind one gets while digging at the hard studies, will be of incalculable value. The natural mind is like a young colt, when first put in harness. It jumps here and there, frets, fumes, and does little work. Drive it awhile in the harness with a broken horse, and in it time settles down to steady effective work. Boys, (and most men too), know how hard it is to concentrate their thoughts upon a subject, to take it up and carefully look upon all sides of it, and come to a right decision. The severe training of a college course gives just the *discipline* of mind that is very useful, whether one is a farmer, a mechanic, a merchant, or anything else. If the boy of 16 has 34 years to five and work in any pursuit, he will accomplish more in the end, if he devote 7 or even 10 years' to disciplining his mind and *getting ready* to work EFFECTIVELY during the remaining 24 or 27 years, than if he did half work during the whole 34 years. Some folks send their "smart boys" to College, and keep their dull ones at work. This is cruel injustice. If Nature has done less for a boy, it is not his fault, and he should have all the more chance to make up natural deficiencies by more severe training and development of what he has. Many years of observation lead us to believe that the naturally dull boys are most benefitted by college study, and on the average they make the most successful men. The bright boys get their lessons easily, and thus lose the habits of *patient application* to hard work which are developed in those of more obtuse natural faculties, and as a consequence the latter become best prepared for life's struggles; they are less appaled by difficulties, and very often come out ahead in the long run. We may say more on this subject another time.

The Doctor's Talks—Blowing Soap-Bubbles.

It is time that we finished the soap-bubble talk, because there are other things that some of you have asked about and these wait for an answer. I was to say something about the beautiful colors seen upon a soap-bubble, and there are few things more difficult than this to explain. To tell you what is known about it would make a very long story, and it would be so difficult to understand that few would read it. Still there are some things about it that will interest you. Did you ever see the image formed when sunlight passes through a three-sided piece of glass, such as the drops to some lamps and chandeliers?—This image is a beautiful sight, just a little bit of rainbow, with all its colors. By the use of a three-sided glass made for the purpose, called a *prism*, a large and fine *spectrum*, as this bit of rainbow is named, may be shown. The use of the prism has very plainly shown that the light of the sun is made up of seven different kinds of light. There are red, orange, yellow, green, blue, indigo, and violet lights or rays, in common sunlight, as can be proved by separating them by a prism, and by bringing all these colored lights together to form white light again. This breaking up of light into different colors is called decomposing it, and it can be decomposed in many other ways than by a prism. Every one of you must have seen the dew-drops on the grass doing it in the early morning sun. You have seen a piece of ice in which was a minute crack, show rainbow colors, and there are other ways in which white light is split up or decomposed into its colored rays. A piece of window glass allows the light to pass through it without change, but if fine lines are ruled upon it with a diamond point, the light will pass through, but it will not be white, but broken up into colors. These lines are ruled very close, over 12,000 having been ruled to an inch. Various surfaces that are not transparent like glass, if they have fine lines ruled upon them will *reflect* rainbow colors.

COLORS IN SOAP-FILM.

Pearl you know shows these colors, and this is because the pearl is built up in minute layers, and its surface has exceedingly fine lines upon it; brass and other metal surfaces ruled with lines will reflect rainbow colors. Very thin films of glass give the same effect, the upper surface and the under surface of the thin bit of glass both reflect light in such a manner as to produce these colors. The learned men say that the colors are produced by "interference," but as that is one of the things that cannot be explained for reasons already mentioned, you will be obliged to take it as a fact, until some time you can learn more about it. Now, when the film of soap and water gets very thin, as you blow the bubble, it acts just like the thin glass; its two surfaces reflect the light in such a way as to split it into the colored rays, and as you make the film thinner and thinner, the colors change. A very pretty way to see the colors is with the glycerine and soap mixture I told you about last month. Pour some of this into a saucer, and then dip into it the edge of a small tumbler, just as you would take up a film of suds with your pipe-bowl when you begin a bubble. The mouth of the tumbler will then have a film of the glycerine and soap stretched across it. Hold the tumbler on its side and watch the film. Such beautiful colors as appear! and in bands as shown in the engraving. The film being held upright, it is growing thinner at its upper part and thicker below, and as its thickness is constantly changing, so the colors change, and the charming bands, with all their glowing tints, chase one another down the film. At last the upper part of the film gets so thin that it is unable to reflect the light in such a manner as to produce the colors; at the top, the thinnest part, grayish patches appear, and soon after that the whole disappears, the film has broken!....I must tell you one more thing about this curious and difficult subject. By experiments with other films, scientific men have found out how thick a film must be to form the different colors, and how thick the film is when it stops producing them. When the bright colors cease and the film is gray, it is known that the soap film is less than $^1/_{100,000}$ of an inch thick! Perhaps you will think that in such a case we should talk about thinness rather than thickness. So common a thing as a soap-bubble can give rise to questions, which even the most learned men find difficult to answer. THE DOCTOR.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. I haul time.
2. Angel Ziva.
3. Notes ran.
4. Pieced love.
5. Agile rust.
6. I get all: sure.
7. Mind one part.
8. Sort canes.
9. Pain out.
10. No crude gum.

CONCEALED NAMES.

(Find 10 boys' and girls' names in the following sentence.)

We are all going over the bridge to-day, nutting. Lulu, Cyrus, Emma, and I. Emma, you can't tell a chestnut from a birch, can you? Is that a sumac or a walnut tree by the side of that crooked, winding path? Is that book a grammar, you have? No, it is "The Coming Race," a most extraordinary affair, I dare say you have heard of it. PUSSY WILLOW.

DOUBLE ACROSTIC.

1. A great desert. 2. A vehicle. 3. A river in one of the Western States. 4. A European Cape. 5. A country in Europe. 6. A bay of the Gulf of Mexico. 7. A river in the South. 8. A European river.—The initials form a country, and the finals a city in the same. HALSEY M. T.

CITIES.

1. Novel, a piece of furniture, and a crossing.
2. An adverb, to make fast, and to surround.
3. A small lake, a pronoun, and a fruit.
4. A man's name, the residence of many. L. W. SHIPLEY.

NUMERICAL ENIGMAS.

1. I am composed of eight letters:
   My 6, 2, 4, 8, is an article of hardware.
   My 5, 7, 3, is sold by the million.
   My 1, 7, 3, is a man's nickname.
   My whole is a favorite title for banks, insurance companies, etc. JIMMY E.
2. I am composed of 14 letters:
   My 1, 3, 2, was a poet.
   My 11, 8, 5, 6, is used in building.
   My 4, 8, 10, 9, is a kind of medicine.
   My 7, 12, 1, 13, is to lament.
   My 14, 8, 1, is a kind of leather.
   My whole is a comment on scandal-mongers. JES.

SQUARE WORDS.

1.—1. A piece of earth. 2. A body of water. 3. A plant. 4. What it sometimes costs. ELLEN M.

2.—1. Something to ride in. 2. An imaginary monster. 3. Science. 4. An examination. CYRUS G.

CROSS WORD.

My first and second are both in starch,
My third and fourth are both in March,
My fifth and sixth are both in regale,
My seventh and eighth are both in assail,
My ninth and tenth are both in lumber,
My eleventh and twelfth are both in number,
My thirteenth you may always find in brown,
And my whole is a statesman of great renown.
ITALIAN BOY.

DECAPITATIONS.

1. Behead a covering and leave a river. 2. Behead "to wear off," and leave value. 3. Behead a collision and leave to whip. 4. Behead to break and leave to be hasty. 5. Behead darkness and leave a machine. 6. Behead a fish and leave an exclamation. NIP.

PI.

Item si het toms lebust tey eth stom beansiltia fo toperdestar, dan yb gapreapin ot kate hotgin si tempertid ot keat lal. GEORGE H. F.

PARAPHRASED PROVERB.

Herb also fastened ton twice two negative superior animal.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

CHANGED HEADS.—Bear, fear, dear, gear, Lear, near, rear, sear, tear, year, wear, pear.

DOUBLE ACROSTIC.

W-illiamspor-T
A- llepp -O
R- usse -L
S- yracus -E
A- ra -D
W- icomic -O

NUMERICAL ENIGMA.—Huntsman's Bugle.

SQUARE WORDS.

1. S M A C K 2. Y I E L D
   M E L O N I N D U E
   A L O N E E D I C T
   C O N G E L U C R E
   K N E E L D E T E R

ANAGRAMS.—1. Intertwine. 2. Misogynist. 3. Auditorial. 4. Cruiser. 5. Obituaries. 6. Marshalled. 7. Schismatic. 8. Incongruous. 9. Forbearance. 10. Forebodingly.

QUERY.—Rapidan (rapid Ann).

RIDDLE.—The teeth.

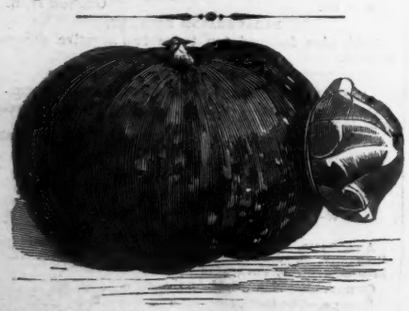
Thanks for letters, puzzles, etc., to Denver C. T., Clio, Albert and Augusta, Edna M. L., R. W. M., Italian Boy, J. T. D., Addie, J. M. Y., and Capt. John W. W.

MRS. M.—You are too modest.

Send communications for the Puzzle Box to Aunt Sue, Box 111, P. O., Brooklyn, N. Y., and *not* to 245 Broadway.

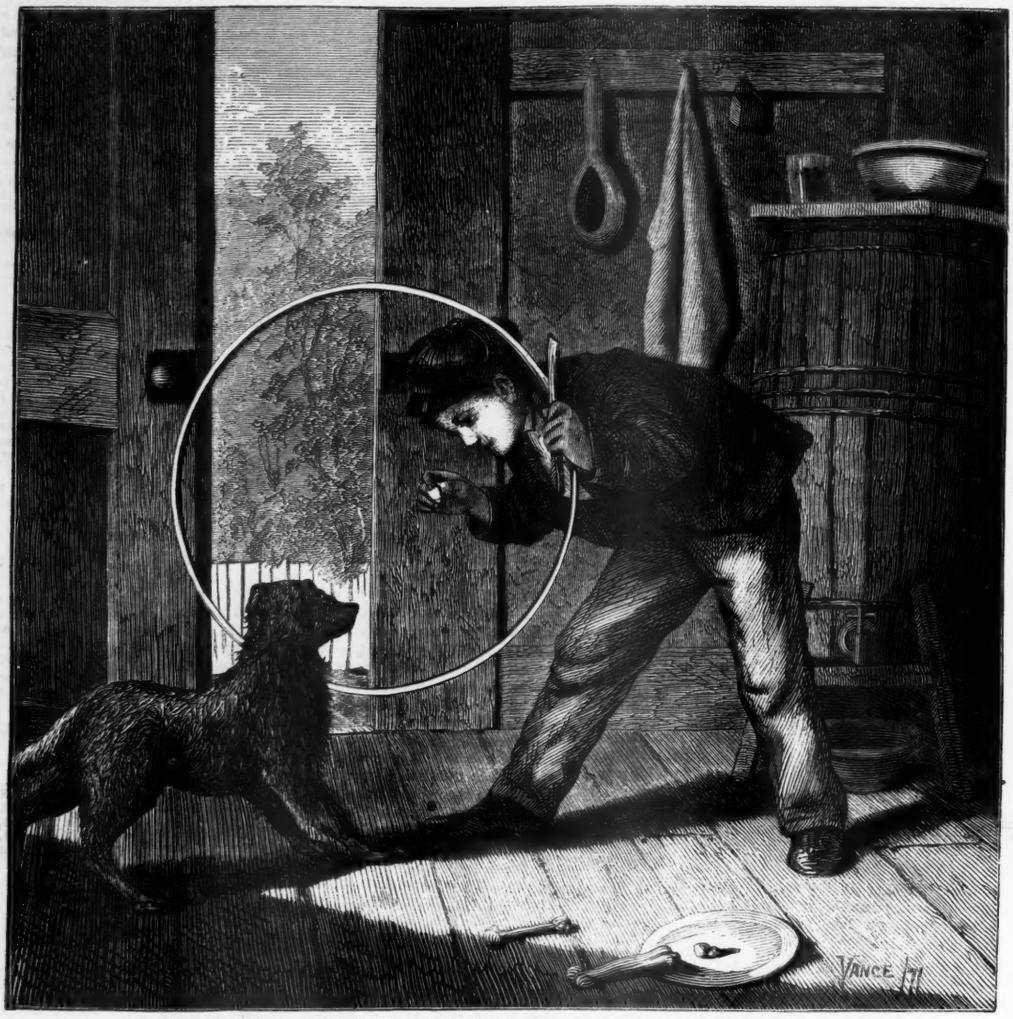
What is Service Berry?

Master Josie E., writing from Lewis Co., Mo., says: "There is a tree that grows abundantly here, and is called 'Sarvis,' or 'Sarvice' Berry Tree. What I wish to know is the *proper name* of the tree, and from what did the name 'Sarvis' originate? I hope you will excuse me for troubling you, but I could not find any one else that could tell me." — Probably Master Josie thinks we are a long while in answering his question, but his letter somehow got mixed with some other matters, and it only turned up just now. To begin with the end of your letter, let us say, do not apologize for "troubling" us, because we do not regard it as a trouble at all, and wish every boy and girl to feel that their questions are gladly welcomed. When they ask questions, we know what they are thinking about and what kind of articles will please them. But to come to the tree; the name "Sarvice" is a mispronunciation of Service. The tree that is known as "Service-berry" in the Eastern States, and we suppose the same one that is so called with you, has long clusters of white flowers in early spring, and a sweet eatable fruit, somewhat larger than a huckleberry. It is also called "Shad-flower," and "June-berry"; the berries are very good, but with us the trees are so few and the birds so many, that but little fruit is left for the boys. Perhaps you would like to know the botanical name of the tree, which is *Amelanchier Canadensis*. There is a similar tree in Savoy, in Europe, which the people there call *Amelancier*, and that name has been taken for the botanical one. You will perhaps be surprised to learn that the Service-berry is very closely related to the apple and pear, but such is the case. When our European ancestors settled in this country, they gave to the plants they found here the names by which they knew similar plants at home, and we have many plants in this country bearing the names of those in the old country, though they may be quite different. As in England, there was a pear-like tree called Service-berry, or Service-tree—it was very natural for them to give the name to a tree that, in some respects, resembled the one they knew at home. But this does not tell you how the name Service came to be applied to the European tree, and that is the funniest part of it. The name comes from *cervisia*, which is the Latin word for *beer*, because in ancient times the fruit of the European tree was used to make a kind of fermented drink, or beer. It is going a long way back you will think to find an answer to your question, but you will find that many words in common use have their beginning away back in the past.



Strange Squashes.

At one of the great horticultural shows held in France last season there were some squashes that attracted much attention. Some appeared to be made up of two parts quite unlike one another, and others of three. Besides squashes, there were gourds showing the same odd appearance. A close inspection showed that these squashes and gourds were grafted; for instance, a bright green kind was cut off when young and had a portion of a yellow one of the same size carefully fitted to it; the two united, the wound healed over, and the double squash grew on as if nothing had happened. Several of these squashes were figured in a French journal, and we have copied one of the pictures, which shows a large green variety with a small summer squash apparently growing out of its side. This appearance is produced by uniting the two when young, by taking off the skin of each and binding the two freshly cut surfaces together. If you ask what use this is, we shall have to answer that we know of no immediate good that can come from uniting squashes of different kinds. It is interesting as showing that what happens with stems can also take place in fruit, for strictly speaking, a squash is a fruit as much as an orange. Still, when experiments of this kind are made, we can never tell what they will lead to, and it is possible that some one may find in this a hint that will show the way to something more useful.



ZIP LEARNING HIS FIRST TRICK.—*Drawn and Engraved for the American Agriculturist.*

Zip Learning his First Trick.

Did you ever notice the great difference there is in dogs? Some are so intelligent and cunning, that we hardly care to teach them any tricks, while others are only interesting on account of the accomplishments which have been taught them, but when not showing off, are rather stupid fellows. Now and then we find one in which native intelligence is added to good schooling, and such a dog is a capital companion. The difference of dogs at school, is quite as great as that of children; some will not be taught, no matter how much they are coaxed and tempted, while others evidently try to do what is asked of them, and if they do not understand what you want them to do, will look at you with an expression which says almost as plainly as words, "try me again, please, I think I understand now." In teaching a dog, the very first thing required is patience, and this of course includes control of your own temper. If you have the affections of the animal, he will try to please you, but if you should so far forget yourself as to get into a passion, scold, or even cuff the poor fellow, he will very likely get the sulks, and prove a poor scholar. One of the first things to teach a dog, and one which all dogs should be taught, whether their education goes any further or not, is to lie down when told, and where he is told. This is usually easy to teach. Recollect that dogs go by the tone, and not by words, and the command to do any particular thing, should be given always as nearly as possible in the same tone of voice. We naturally say "lay down," in a different tone from "come here." Another useful thing to teach a dog, is never to eat unless he is told. After he is properly taught to lie down, place his food before him, and do not allow him to touch it until you give the word. Always have the same word for this, such as "Take," "Now, sir," or whatever you choose. After a while let the food be before him a longer and longer time, until he can be safely left with it while you go out of sight. While teaching this lesson, only the teacher should feed the dog, and it should be repeated every time he is fed. These are useful lessons instead of tricks. Master Robert is showing Zip one of the commonest tricks—leaping through a hoop. Begin with a large hoop held low, and gradually increase the hight at which the hoop is held, and make it smaller. We have seen a dog leap through a hoop so small, that you would hardly think it could pass over his body. Master Robert has learned one of the secrets of success in teaching his dog; he has something in his hand with which to reward him when he has done handsomely. Dogs are generally fond of sugar; they should not have too much, as it tends to make them fat, but a lump now and then, as a reward for well doing, may be given, or a small cracker will answer. It is not necessary to state the many things that a bright dog may be taught, if one will persevere, and a well educated animal will repay the trouble his lessons have cost.

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Howard & Co., 222 Fifth Avenue, New York:
Send me your new Price List of Waltham Watches as advertised in the American Agriculturist.
(Sign name and address in full.)

By return mail you will receive the Price List free and postpaid. It is a book of 16 pages, and in it are described **ONE HUNDRED AND SIXTY-FOUR VARIETIES** of Waltham Watches, from which you cannot fail to make a selection. Send us the order according to the directions in the Price List, and **WE WILL SEND THE WATCH** by express, with the bill to collect on delivery. On every bill are instructions to the Express Agent to allow the purchaser to **OPEN THE PACKAGE AND EXAMINE** the watch before paying. If it is not in every way satisfactory you need not take it, but let it **COME BACK AT OUR EXPENSE**; even after you have taken and paid for it, if it does not prove satisfactory, you can exchange it, or we will **REFUND THE MONEY** at any time within a year.

Do not let distance from New York deter you from writing, as the farther you are **THE MORE ADVANTAGE IT IS FOR YOU** to buy of us.

We have sold some Sixteen Thousand Waltham Watches on this plan during the last six years, and fully one-half went **WEST OF THE MISSISSIPPI** and to the Pacific States and Territories. At all events, if you feel the least interest in the matter, write for the Price List. **IT WILL ONLY COST YOU ONE CENT** for a postal card.

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(CIRCULAR.)

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No. 8 Church Street,
P. O. Box 5,509. New York City.

This is a combination of capitalists to supply the consumers of Teas throughout the United States on the mutual principle

We have experienced agents in all the best districts of China and Japan to select Teas especially for our trade.

We expect every consumer of Teas to render us all the assistance they can in carrying out our enterprise, as we make a specialty of SUPPLYING CONSUMERS ONLY (and allow no middlemen to make any profit on our importations), which will enable us to supply them with Teas at prices lower than have ever been known, and of those fine qualities that seldom reach the interior, being sold only in the large cities and among the very wealthy.

Hoping the consumer will take an interest in our enterprise, and send at once for a circular with full explanations of how to proceed to obtain our goods, we remain,

Most respectfully yours,

Consumers' Importing Tea Co.,
No. 8 Church Street,
P. O. Box 5,509. New York City.

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FOR EVERYBODY.

Our new handsomely-illustrated **Catalogue for 1875** is now ready. Sent to any address on receipt of a letter stamp. Address the

BELLEVUE NURSERY COMPANY,
Paterson, New Jersey.

STATEMENT OF

The Mutual Life Insurance Company of New-York,

F. S. WINSTON, President,

FOR THE YEAR ENDING DECEMBER 31, 1874.

ANNUITY ACCOUNT.

	No.	Ann. Pay'ts.		No.	Ann. Pay'ts.
In force, Jan. 1st, 1874,	47	$22,000 00	In force, Jan. 1st, 1875,	49	$26,653 00
Issued and Restored,	3	4,701 00	Terminated,	1	48 00
	50	$26,701 00		50	$26,701 00

INSURANCE ACCOUNT.

In force, Jan. 1st, 1874,	86,416	$289,505,836	In force, Jan. 1st, 1875,	90,914	$301,928,736
New Risks,	12,756	38,126,906	Terminated,	8,258	25,704,016
	99,172	$327,632,742		99,172	$327,632,742

REVENUE ACCOUNT.

Dr.		Cr.	
To Balance from last account	$62,363,157 38	By paid Death and Endowment Claims,	$3,468,645 79
" Premiums received	15,651,078 35	" " Annuities	25,250 27
" Interest and Rents	4,206,074 95	" " Dividends	2,901,197 11
		" " Surrendered Policies and Additions	4,984,615 36
		" " Commissions (payment of current and extinguishment of future)	800,499 96
		" " Expenses and Taxes	792,690 88
		Balance to New Account	69,157,411 31
	$82,220,310 68		$82,220,310 68

BALANCE SHEET.

Dr.		Cr.	
To Reserve at four per cent	$67,911,199 47	By Bonds and Mortgages	$56,916,056 39
" Claims by Death, not yet due	442,306 79	" United States and New-York State Stocks	3,023,375 32
" Post-mortem Dividends, due on demand	28,830 47	" Real Estate	2,767,273 99
" Premiums paid in advance	24,191 22	" Cash in Banks and Trust Companies at interest	2,425,882 34
" Undivided Surplus	4,040,442 11	" Interest accrued	1,085,982 15
		" Premiums deferred, quarterly and semi-annual	1,095,672 19
		" Premiums in transit, principally for December	120,225 28
		" Balances due by Agents	12,502 34
	$72,446,970 06		$72,446,970 06

From the Undivided Surplus a Dividend will be apportioned to each Policy which shall be in force at its anniversary in 1875.

I have carefully examined the foregoing Statement, and find the same correct.
January 20th, 1875. ISAAC F. LLOYD, *Auditor.*

NOTE.—By act of the Trustees the membership of this Company is limited to one hundred thousand insured lives.

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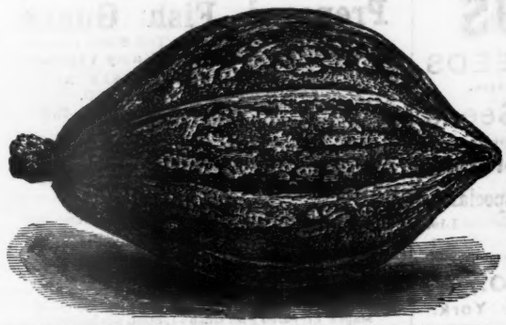

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Improved Agricultural Implements, Fertilizers, etc., etc.

SEEDS
UPON WHICH YOU CAN DEPEND.

YOUNG & ELLIOTT
HAVE REMOVED FROM
9 John St.
to 12 CORTLANDT ST., NEW YORK.

Send for their ILLUSTRATED CATALOGUE, free, of VEGETABLE AND FLOWER SEEDS, that never fail.

MAPES'
Prepared Fish Guano.
ESPECIALLY ADAPTED TO THE GROWING OF
Cabbages, Beets, Carrots, & Early Vegetables.
THE MOST SOLUBLE AND QUICKLY ACTING FERTILIZER YET PREPARED.

Analysis made by Dr. I. Walz, N. Y., Nov. 17, 1874, of Sample from cargo sch. Albert Mason:

Ammonia	6.11
Decomposed Phosphate	18.
Insoluble Phosphate	3.87
SOLUBILITY OF THIS SAMPLE:	
Soluble in cold water	43.57
" " Citrate of Ammonia, sp. gr. 1.09	17.95
Organic Animal Matter, insoluble in cold water or Citrate of Ammonia	29.71
Inorganic Matter, insoluble in cold water or Citrate of Ammonia	8.77
Inorganic Matter, insoluble in Hydrochloric Acid (sand, etc.)	2.20
	100.00

Estimated CASH COMMERCIAL VALUE per ton of Mapes' Prepared Fish Guano (potash not included) as per above analysis **$52.10**

The universal success that has attended the use of fish guano, ("scrap,") especially among the TRUCK GROWERS and FARMERS located in the vicinity of its production has led to a demand for a PREPARED *Fish Guano, of suitable condition for transportation and general use*, and free from the *bulkiness, dampness*, (frequently nearly forty per cent water,) *offensive and objectionable* features of crude fish scrap.

Price per ton, in bags (180 lbs.,) delivered at New York, $45.00.

Send for pamphlet to
CHARLES V. MAPES, 160 Front St., N. Y.

CROTON GRAPE.
Two fine 2-year old vines for one dollar, sent post-paid on receipt of price. S. W. UNDERHILL, Croton Landing, N. Y.

FLOWER SEEDS BY MAIL.
30 Varieties of choice Annuals, $1.00; 13 Varieties, 50 cts. This collection contains the choicest English Pansies, German Asters, Stocks, Pinks, Double Hollyhocks, Verbenas, Double Portulaca, and is every way worthy of confidence. Each packet contains a mixture of its kind, and a great display can be made at a small cost. Sent post-paid.
STAR CO., Clintonville, Conn.

KNOX FRUIT FARM AND NURSERIES.
GREAT OFFERS!
MORE LIBERAL OFFERS WERE NEVER MADE than the following: ☞ We will send by mail, post-paid, safe carriage guaranteed,

18 Flowering Plants FOR $1.10.

2 Verbenas,	2 Chrysanthemums,
2 Coleus,	1 Ageratum,
1 Fuchsia,	1 Canna,
1 Heliotrope,	1 Tuberose,
1 Geranium,	1 Monthly Rose,
1 Gladiolus,	1 Petunia,
1 Salvia,	2 Basket Plants,

With directions for growing.

8 Grape-Vines FOR $1.10.
2 Concord,
1 Martha,
1 Hartford,
1 Creveling,
3 Rogers' Hybrids,
All one year old extra vines.

5 Varieties Strawberries FOR $1.10.
25 Jucunda, "Our No. 700,"
12 Burr's New Pine, 12 Wilson,
12 Chas. Downing, 12 Lennings White.

4 Varieties Raspberries FOR $1.10.
6 Naomi, 3 Clarke,
6 Philadelphia, 3 Hornet.

CUT OUT LISTS AND SEND WITH ORDER.

☞ Our handsome Catalogue of Fruits and Flowers, containing full directions for cultivation, will be sent to all who send address.

GRIMES & MEYER, **BOX 115,** PITTSBURG, PENN.

SEEDS.
Send 10 cts. for our **CATALOGUE of FLOWER and VEGETABLE SEEDS** for 1875. Beautifully illustrated. Address
BAGG & BATCHELDER,
Springfield, Mass.

Gospel Singer.
BY
PHILIP PHILLIPS.
The Singing Book for all Sabbath Schools.
JUST ISSUED.
$30 per 100 copies. Sample copy, by mail, 35 cts.
Lee & Walker. *922 Chestnut Street, Philadelphia.*

THE NEW POTATO.
Thorburn's Early PARAGON.

A seedling of the "Early Rose" fertilized with the pollen of the white "Peach Blow," ripening with the former, and combining more superior qualities in a higher degree than any other Early Potato now in use.

Three pound packages by mail, post-paid, $1.80. Price per bushel or barrel as per catalogue.

J. M. Thorburn & Co.,
15 John Street, New York.

CHEAP **SEEDS** are Worthless.
Buy directly of the Grower, and get good stock.
SEND FOR OUR **NEW CATALOGUE FOR 1875,**
FREE to any address. **GEO. S. HASKELL & CO., Seed Farmers,** Rockford, Illinois.

CHOICE SEEDS carefully grown from selected stock by a cautious grower **always pay. Try mine.** See advertisement "Test is better than Talk," on page 110.
J. B. ROOT, Seed Grower, Rockford, Ill.

SUGAR MAKER'S FRIEND

PRICE, $4.50 per hundred.

More Agents wanted to canvass for the sale of **POST'S PATENT GALVANIZED METALLIC EUREKA SAP SPOUTS and BUCKET HANGERS.** Samples, Circulars and Terms sent post-paid on rec't of 20c.
C. C. POST, Man'f & Pat'e, Burlington, Vt.

MAPES'
DISSOLVED BONE.

COMPOSED OF ONLY

Pure Bone Black, Dissolved in Sulphuric Acid, forming the highest grade Superphosphate that can be made from Bone.

Analysis made October, 1874, by DR. I. WALZ.

Moisture	14.14
Soluble Phosphoric Acid	14.26
= Decomposed Phosphate	31.13
Insoluble Phosphoric Acid	89
= Undecomposed Phosphate	1.32

Guaranteed Standard, on Dry Basis, Soluble Phosphoric Acid 15 per cent.

This preparation is recommended for use in "COMPOSTS" and for mixing with Peruvian Guano, Stable Manure, Fish Guano, and other ammoniacal material. Price per ton packed in barrels (no charge for packages) delivered at New York, $45 per ton.

PLAIN SUPER PHOSPHATE
(or "Acid Phosphate,")

A Cheap Substitute for Dissolved Bone.

The base of this Super Phosphate being South Carolina Rock, instead of BONE, it can be afforded at a price sufficiently low to successfully compete with the cost of importing a similar article from ENGLAND. (12½c. currency per lb. for Soluble Phosphoric Acid. See Report of the "Bussey Institution," 1874, page 170)

Analysis by DR. I. WALZ, New York, Oct. 1874.

Moisture	4.26
Soluble and Precipitated Phos. Acid	11.38
= Decomposed Phosphate	24.84
Insoluble Phos. Acid	6.69
= Undecomposed Phosphate	14.61

Price on the basis of ten per cent.

SOLUBLE AND PRECIPITATED PHOSPHORIC ACID, per ton in barrels (no charge for packages) delivered at New York, $30. Liberal discount on purchases of ten tons and over. Send for pamphlet to

CHARLES V. MAPES,
160 Front St., N. Y.

D. W. KOLBE,

Surgical Instrument Maker to the University of Pennsylvania,

15 South 9th St.,

PHILADELPHIA, PA.

Has always on hand Dr. McClure's Ecraseur for Castrating Horses without loss of blood.

Directions how to use it will be furnished with each Instrument.

See Dr. McClure's work on Horses and Cattle.

RAILWAY PITCHING APPARATUS.

Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.
G. B. Weeks & Co., Syracuse, N. Y.

RUSTIC WORK.

Hanging Baskets—Stands—Brackets—Crosses—Settees—Chairs.

Pot Stands, **our new design,** for ¼ gallon and 1, 2, and 4 gallon pots. **Just the thing for Porticos, Lawns, and Cemeteries.**

ILLUSTRATED CATALOGUE FREE.

PECK & SKILTON,
Westville, Conn.

N.B. Red Cedar Labels.

See February Agriculturist, page 43.

MAPES'
NITROGENIZED SUPER-PHOSPHATE.

A Complete Fertilizer for all Crops.

MANUFACTURED FROM

ANIMAL MATTER (Bone, Flesh), Sulphuric Acid, and Potash Salts.

Analysis of Samples taken by the State Inspector, from cargoes sch. Albert Mason and sch. S. V. U. Simmons, made at Charleston, S. C., Jan., 1875.

Bone Phosphate, dissolved	16.96 per cent.
" " reduced	3.47 "
" " *available*	20.43 "
Ammonia	3.06

Signed, DR. C. U. SHEPARD, JR.

Analysis of Samples taken by the State Inspector (Georgia) from sch. May Morn, (3000 bags), Dec. 22, 1874.

Bone Phosphate, *available*	19.040
Ammonia	3.190

Signed, S. A. GOLDSCHMIDT.

Awarded Silver Medal (only three given in several hundred prizes), by New Jersey State Agricultural Society, October, 1874, Professor Geo. H. Cook, (New Jersey State Chemist and Geologist, and State Inspector of Fertilizers) Chairman of Committee on Fertilizers.

Price reduced to $50 per Ton (2000 lbs.) packed { **in bags (200 lbs.)** / **in barrels (250 lbs.)**

Send for pamphlet, containing letters from fruit and truck growers, farmers, etc.

CHARLES V. MAPES, 160 Front st., N. Y.
Or, ALFRED BRIDGEMAN, 876 Broadway,
B. K. BLISS & SONS, 34 Barclay st.,
R. C. REEVES, 185 & 187 Water st.

Carr & Hobson

Offer the best and **most comprehensive** line of thoroughly-built **modern** Agricultural Implements in the market. Our **GANG PLOW,** "The Volcano," is a machine for every large farmer, while our combined Level-Land and Side-Hill Swivel Plow, The Turtle Harrow, Subsoil Plow, Horse-Hoes, Seed-Drills, etc., are famous everywhere. Call and examine our goods, befor buying your Spring Supplies, or write us what you need. **56** Beekman-st., New York.

"ESTABLISHED 1821."
THOMAS T. TASKER, JR., STEPHEN P. M. TASKER.

MORRIS, TASKER & CO.

PASCAL IRON WORKS, Philadelphia.
TASKER IRON WORKS, New Castle, Delaware.
Offices & Warehouses, Philadelphia, New York, and Boston.
Manufacturers of Wrought Iron Tubes, plain, galvanized and *rubber coated.* Boiler Tubes. Oil Well Tubing and Casing. Gas and Steam Fittings, Valves and Cocks. Gas and Steam Fitters' Tools. Cast Iron Pipe. Lamp Posts and Lanterns. Improved Coal Gas Apparatus, Improved Sugar Machinery, &c.

We would call special attention to our Patent Vulcanized Rubber-coated Tube.

Self-Propelling Chairs For Cripples and Invalids

Can be *easily* propelled, either in or out doors, by any one having the use of hands.

State your weight and send stamp for illustrated catalogue of different styles and prices.

Please mention this paper.

S. A. SMITH,
No. 32 Platt St.,
N. Y. City.

W. H. BANKS & CO.,

SEEDS.

A large supply of Field, Garden and Flower Seeds, WARRANTED FRESH. Send for Price List.

Comstock's Seeder, Hand Cultivator,
Weeder, Strawberry Vine Cutter, Shovel and Mole Plows,
Combined or Separate.

W. H. BANKS & CO., Wholesale and Retail Seedsmen,
34 & 36 S. Canal St., cor. Washington, CHICAGO.

GALE'S HAY, STRAW & STALK CUTTERS,

for hand or horse-power—are much lower in price, cut faster, easier, and are more durable than any other. Also the best and cheapest Turnip and Carrot Cutter. Don't pay till you have tried them on your farm and like them. Circulars free.
WARREN GALE,
Chicopee Falls, Mass.

COWS

of the Black and White Spotted Breed of North Holland, celebrated for their abundant milk, and now frequently imported into the U. S., may be ordered by L. W. MORRIS, Morris' European Express, 50 Broadway, N. Y., Estab'd 1868.

AMSDEN JUNE PEACH, "Unequaled for Earliness." $1 each, $50 per 100. Circular **Free.**
L. C. AMSDEN, Carthage, Mo.

BUY J. & P. COATS' BLACK THREAD for your MACHINE.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 87.

"Astonished."—One of our good advertisers wrote February 9, expressing surprise (gratifying of course) at the number of intelligent letters already received at that date, from a brief advertisement in the February *American Agriculturist*, these letters coming from an area with a constant widening diameter, which had up to that date extended away to Kansas. We suspect they are still more surprised by this time, especially if their experience is like that of another of our advertisers who offered a pamphlet to such as desired to send for it. His advertisement was ordered for two months, and an edition of 500 of the pamphlets were printed at a cost including postage of 10 cents each. Before the second insertion, he wrote, post-haste, to "stop that advertisement; it will break me; over **13,000** pamphlets have already been called for, and 'still they come.'" He was "astonished," but we were not. The fact is, this journal reaches the great mass, tens of thousands upon tens of thousands, of the wide-awake intelligent people, farmers, and almost all other classes throughout our own country, and in other lands. And as they learn of our rules shutting out humbugs, medicines, unreliable dealers, etc., they patronize our advertisers freely and with confidence. We know there is no other advertising medium in the world more valuable. Our old and large advertisers who have used this journal for many years all say so, and it stands to reason that it should be so. The select and reliable character of the advertisements, their neat printing on small pages where they are readily seen, and the long time each paper is before the readers for study and reference, are all useful to the advertiser.

Metallic Butter Pail.—"L. W. P.", Marshfield, Vt. Butter for shipment to foreign countries should be packed in tin-pails, with water tight covers. The brine does not corrode the tin, and the experience so far with these packages is favorable. There are many important points in favor of metallic packages, such as cheapness, cleanliness, freedom from loss of weight, and loss of quality in transit and storage. The Metallic Butter Package Co., 150 Chambers St., New York, are now making a tin-pail with close fitting wooden cover, and weighing only 5 lbs., which seems to be what is wanted by dairymen.

Catalogues Received.

The following are the catalogues received up to Feb. 15th. Others will be found noticed in January. The enumeration is in alphabetical order, and it is not intended to give one undue prominence over others:

SEEDSMEN.

Unless specially mentioned, the catalogues offer both vegetable and flower seeds.

R. H. ALLEN & Co., 189 and 191 Water st., N. Y. General stock, with special attention to grass and grain seeds.

B. K. BLISS & SONS, 34 Barclay st., N. Y. An illustrated treatise of nearly 200 pages, rather than a catalogue.

BAGG & BATCHELDER, at Springfield, Mass., offer vegetable and flower seeds.

ALFRED BRIDGEMAN, 876 Broadway, N. Y., has two neat catalogues, giving vegetables and flowers separately.

BRIGGS & BROS., Rochester, N. Y. Whether we consider its size or elaborate character, this is certainly a wonderful catalogue. It offers many novelties.

CHASE BROS. & WOODWARD, Rochester, N. Y., a beautiful and highly illustrated catalogue of seeds, fruits, etc., many of which are of their own raising.

COLE & BROTHER, Pella, Iowa, raise seeds and offer chromos to purchasers.

D. T. CURTIS & Co., Boston, Mass., have three catalogues, vegetables, flowers, and novelties.

HENRY A. DREER's catalogue is in the form of Dreer's Garden Calendar, and very full.

JAMES FLEMING, 67 Nassau st., N. Y., offers, besides seeds, various implements and garden appliances.

J. A. FOOTE, Terre Haute, Ind. A well selected assortment.

JAS. J. H. GREGORY, Marblehead, Mass., is best known for his vegetables, but he has flowers also—and squashes.

JAMES R. V. HAWKINS, Goshen, Orange Co., N. Y., has also several new potatoes not generally known.

R. D. HAWLEY, Hartford, Conn., besides engravings of vegetables and implements, gives one of the new State House.

PETER HENDERSON & Co., 35 Cortlandt st., N. Y., give

fine colored plates of flowers, and one of the new Early Summer Cabbage.

HOVEY & Co., Boston, Mass., one of the oldest houses, but keeps pace with the novelties.

A. HOWARD & Co., Pontoosuc, Ill., has bulbs and plants as well as seeds.

DAVID LANDRETH & SON, Philadelphia, Pa., add to the catalogue of their well known seeds, a useful Rural Register and Almanac.

G. A. LAW, Roslindale, near Boston, Mass. Also bulbs and vegetable plants.

JOHN F. OTWELL, St. Mary's, Ont., Canada, is a market gardener, who now puts out his first catalogue of seeds. A very creditable attempt.

PLANT SEED COMPANY, St. Louis, Mo., send a large and elegant catalogue, and a smaller one in the form of an Almanac.

PERRY & ROBINSON, Syracuse, N. Y., offer premiums for the best plants raised from their seeds.

JOHN SAUL, Washington, D. C., has, as his catalogue shows, a seed store, besides his nursery and florists' establishment.

R. H. SHUMWAY, Rockford, Ill., sends his Annual Illustrated Garden Guide.

WM. H. SPOONER, Boston, Mass., sends a Gardening Guide; full, neat, and instructive.

J. M. THORBURN & Co., 15 John St., N. Y. City, send four neat catalogues, vegetable, flower, and tree seeds, a wholesale trade list, and all full of the best.

JAMES VICK, Rochester, N. Y., calls his catalogue a Floral Guide; he says that it is so good that the post-office clerks or some one else steal it, that is why people complain of not getting it—He has a German edition.

WASHBURN & Co., Boston, Mass., in their Cultivator's Guide offer all the "Boston notions."

H. YOUNG, York, Pa., has flower and vegetable seeds, as well as plants of various kinds.

NURSERYMEN.

Some of these are also largely engaged in flower growing—where this is the case, it is mentioned, as is any specialty.

S. W. ADAMS, Springfield, Mass., also young evergreens.

P. J. BERCKMANS, Augusta, Ga. Peaches a specialty. Also flowers.

CHAS. BLACK, Highstown, N. J. Peaches in large quantities.

BRONSON, HOPKINS, & Co., Geneva, N. Y., send their wholesale trade list.

A. BRYANT, Jr., Princeton, Ill., has a full assortment of fruit and forest trees.

ROBT. DOUGLAS & SONS, Waukegan, Ill., evergreen and other forest tree seedlings are offered by the million.

BENJ. A. ELLIOTT & Co., Pittsburgh, Pa., offer fruit and ornamental trees.

ELLWANGER & BARRY, Rochester, N. Y. The extent of this establishment is shown by its catalogues, of which we have four, covering fruit, ornamental, green-house and every other department.

A. HANCE & SON, Red Bank, N. J., also green-house plants.

C. L. HOAG, Lockport, N. Y. Grapevines and strawberries.

HOOPES BROTHER & THOMAS, Westchester, Pa., include ornamental plants.

T. S. HUBBARD, Fredonia, N. Y., specially grapes.

T. C. MAXWELL & BROS., Geneva, N. Y., have a very full catalogue, including many new and rare ornamental trees. They make a specialty of the finer kinds of clematis.

THOMAS MEEHAN, Germantown, Pa., specially hedge and ornamental plants, tree seeds, greenhouse.

OTTO & ACHELIS, Westchester, Pa. Also large quantities of seedling and other small stock.

S. B. PARSONS & SONS, Flushing, N. Y., specialties, evergreens, camellias, rhododendrons and azaleas.

RANDOLPH PETERS, Wilmington, Del. Peaches a specialty.

RICHARDSON & VAIL, Geneva, N. Y. A wholesale list with some very low prices.

JOHN SAUL, Washington, D.C. Also greenhouse plants.

J. H. SIMPSON, KNOX Nurseries, Vincennes, Ind. Wholesale list of fruit and ornamental trees.

STORRS, HARRISON & Co., Painesville, O. Seedling chestnut trees a specialty—also florists' plants.

E. WARE SYLVESTER, Lyons, N. Y. Peppermint-roots also.

N. M. THOMPSON, St. Francis, Wis. Evergreen and deciduous tree seedlings.

FLORISTS.

Many of the nurserymen are also florists; see the catalogues enumerated above.

BELLEVUE NURSERY CO., H. E. Chitty, Sup't., Paterson, N. J. Some fine novelties.

D. H. BROWN & SONS, New Brunswick, N. J. Also vegetable plants.

DINGEE & CONARD Co., West Grove, Pa. Roses a specialty.

R. G. HANFORD, Columbus, O. A very full list.

PETER HENDERSON, 35 Cortlandt st., N. Y., and Jersey City Hights, N. J. Amply illustrated—unusually fine colored plate of roses.

LONG BROTHERS, Buffalo, N. Y., have a plant catalogue, besides a useful little work, the Home Florist.

W. F. MASSEY & Co., Chestertown, Md. Their dollar collections afford plants very cheap.

TYRA MONTGOMERY, Mattoon, Ill. A special rose list and very full.

HENRY S. RUPP, Shiremanstown, Cumberland Co., Pa. A special catalogue of plants sent by mail.

GEORGE SUCH, South Amboy, N. J. The wonderful rare plant catalogue of Mr. S. was noticed some months ago. This contains mainly bedding plants and gladiolus.

E. Y. TEAS & Co., Richmond, Ind. A fine rose-list with many novelties.

IMPLEMENTS AND MISCELLANEOUS.

The seed dealers generally keep garden implements of all kinds, and some have those for farm work.

BRAMHALL & Co., 128 Chambers st., N. Y., manufacture children's carriages, wagons, and sleds, of all kinds in great variety.

A. E. COOPER, Cooper's Plains, N. Y. Balcony and other strong and elegant chairs.

WM. CLIFT, Mystic Bridge, Conn. Stock of various kinds. Pekin Ducks and Bronze Turkeys a specialty.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y., offers, among other things, the much talked of Essex pigs, and the productive and popular Late Rose potatoes.

HIGGANUM MANUFACTURING Co., at Higganum, Conn., publish a New England Almanac, from which their own manufactures are not omitted.

N. Y. KNITTING MACHINE Co., 689 Broadway. Various styles of Bickford knitting machines.

SCHENECTADY AGRICULTURAL WORKS, at Schenectady, N. Y., are carried on by G. Westinghouse & Co., for the manufacture of various farm machines and implements,

EUROPEAN CATALOGUES.

WILLIAM BULL, London, S. W., (Eng.). Bulbs and tuberous-rooted plants—an immense list.

WAITE, BURNELL, HUGGINS & Co., London, Eng., have also a house in Havre, France. They are among the heaviest wholesale seed dealers abroad.

J. B. GUILLOT, FILS, Lyons, France. This is one of the great rose houses of the world, and their stock immense.

LOUIS LEROY, Angers, France. Pabst & Esch, N. Y., agents. Wholesale catalogue.

JOSEPH SCHWARTZ, Lyons, France. New roses.

VILMORIN, ANDRIEUX & Co., Paris, France, Pabst & Esch, No. 11 Murray St., N. Y., agents, send their wholesale list of seeds of all kinds, and a wonderfully comprehensive document it is.

J. C. SCHMIDT, Erfurt, Germany. Dried and preserved, as well as living greenhouse plants.

American Dairymen's Convention.—The tenth annual meeting of this Association began at Utica on January 12th. Delegates from New England, Ohio, Pennsylvania, several of the Western States, and Canada, were present. Several papers were read, and discussions held upon the subjects treated in them. The most noticable points brought out were that poor milk is caused by poor feed; corn-meal is not, on the whole, a satisfactory feed for milch cows, and must be fed with great caution; bad milk makes bad butter and cheese; too much acid in the curd makes poor and crumbly cheese; it is not the most cream that makes the most butter, some creams yield three times as much butter as others; dairy practice can not be regulated by guess-work; the coming butter-package is a tin one that shall cost very little, and will not be returned; the lower qualities of butter are the most difficult of sale, and drag down the whole market with them; the best qualities of butter never stay in the market unsold; the steadily improving quality of American cheese is extending the demand for it in European markets, no poor dairy products are wanted anywhere. Generally the proceedings were interesting and instructive. That portion relating to the manufacture of cheese out of skim-milk, and a preparation of tallow known as oleo-margarine, can hardly be called instructive, unless it be to the unhappy consumers of the cheese and so-called butter, who may thereby be warned against using any abominable adulteration of this kind. It is very strange that a dairymen's association should quietly listen to an endorsement by any of its officers and leaders of a method of adulteration, which can only have the effect of casting doubt upon the character of their products, and of tending to diminish the popular demand for one of the most valuable articles of food. Tallow, by whatever name it be called, can never become a dairy product.

A Flower Garden, and no Manure.—"M. N. R.," writes from Vermont: "I want a flower garden. No manure of any kind to be had. Can I use the commercial fertilizers? If so, what kind is the best?"—In such a case we should use fine bone, or some of the manures made with dried blood, several of which are advertised. If the garden is not a large one, there should be no difficulty in making during the coming season, all the manure that will be needed for another year. In some place out of sight, make a pit 2 or 3 feet deep, and of convenient size. Begin in spring, and gather all the leaves you can find after the snow is off; put these into the pit, add every bit of sod from trimmings of paths, or what can be had from the road-side; throw in all weeds that have not gone to seed, and all the refuse vegetable matter of the place, and if you have a vegetable garden too, there will be a plenty. Keep all this moist with chamber-slops; if it gives off a bad smell, throw on a coating of dry earth. Put here all waste vegetable and animal stuff that will decay; let some one look out for the manure dropped in the road by passing animals, or, if you live on a paved street, sweep the portion in front of your place once a week, and take the sweepings as pay. If there are woods near by, hire some one to bring a load or two of the earth, provided it looks rich. Save all twigs, brush, and whatever will not readily decay, burn, and preserve the ashes. See if any neighbor throws away the sweepings of his hen-house or pigeon loft, and get that or buy it if for sale. It must be a strange place, if, with a little attention to the matter, you can not get together all the manure you will need.

Mandarin Ducks.—Upon the Annual "Show Bill," which is sent to canvassers for the *Agriculturist*, there is among the engravings a pair of Mandarin Ducks, which have attracted much attention, and we are daily in receipt of letters asking where the birds or their eggs may be had. The engraving was made two or three years ago, of a pair of ducks in the possession of a private gentleman, who kept them for the great beauty of their plumage. The birds are very small, and they can only be regarded as ornamental water fowls. If any have eggs for sale, they will do well to advertise, as the enquiries are very numerous.

Rubber Shoes for Horses.—"J. J. A.," Cumberland Co., N. J. The rubber shoes for horses you wish for working upon salt meadows, may be procured of C. M. Moseman & Bro., 114 Chambers St., New York. These shoes are valuable for many purposes; for tender feet; for corns; in mowing lawns, the surfaces of which should not be marked by the horse shoes; for quarter crack; contracted hoofs; interfering; and in breaking colts.

"Walks and Talks" Correspondence.

FEEDING WHEAT TO STOCK.—"G. B.," Nebraska, writes that in his section "all the farmers are feeding wheat, and generally with very indifferent results. I have done better than some others, as I made a cutting-box, and feed chopped food entirely."

WHEAT *vs.* BRAN.—The same correspondent asks, "which would be the better economy, to exchange a bushel of wheat for 20 lbs. of bran and 40 lbs. of shorts, or to have it chopped, and give one-eighth toll. I can do either, but do not know how to decide."—I feel sure that 60 lbs. of wheat are worth more than 60 lbs. of bran and shorts. As to paying one-eight for grinding the wheat, I am not so certain. If I had the wheat in the sheaves, I would neither thrash it or grind it. I would run the sheaves through a feed-cutter, and feed the whole together. We frequently do this with oats. The wheat, straw, and chaff would then be all mixed up together, and the cows, horses, and sheep, if fed judiciously, would digest the wheat.

FEEDING JUDICIOUSLY.—The Deacon, who happened in while I was answering this letter, asked, "what do you mean by feeding judiciously?"—That depends. In this case I meant giving the horses and cows no more at a time than they would eat up clean, without stopping to "mouth it over," and pick out the grain. The point is to make them eat grain and straw together. I would far rather feed horses and cows *whole* grain mixed with straw or hay, than to feed them meal alone. The chief advantage in feeding meal, is that it can be so mixed with cut feed, that the animals can not separate the meal from the straw and hay.

FEEDING PIGS.—"Would you," asks a correspondent at Huntington, Ind., "feed spring pigs that are to be slaughtered in November, all the food they will eat all the time, or would you just feed them enough to keep them in good growing order?"—I would give them all they would eat and digest. If they are getting too fat, reduce the quality of their food, but let them have all they want of *something*. In other words, I would let them have the run of a good pasture, and give them corn and slops enough to keep them growing as rapidly as possible. If they seem to be getting too fat, ease up a little on the corn, but let them have all the slops or grass or clover they will eat.

COMPOSITION OF CORN COBS.—An old friend in Canada asks me to inform him "of what elements a corn cob consists?"—Of precisely the same elements as sawdust. In fact, when you come to elements, all plants and animals are pretty much the same thing. In this sense there is no difference between a stick of celery and a burdock, or a Canada thistle. Woody fibre, and starch, and sugar, are composed of the same elements. But we need not say that there is a vast difference in their nutritive value. A green corn cob, when it is full of the juices which are afterwards organized into grain, is a very different thing from the dry corn cob of the ripened ear. When the latter is ground fine, I presume a half starved sheep or cow can digest more or less of its woody fibre. But I doubt very much whether there is nutriment enough in the cob to pay for the grinding.

CORN *vs.* CLOVER FOR PIGS.—"J. C. C.," of Indiana, writes, "You recommended letting pigs run on clover pasture in summer. I have good land to produce corn. It averages one year with another 60 bushels per acre. The same land will bring a very heavy crop of clover. It costs me about 10 cts. a bushel, to raise and put the corn in the crib. Now which is worth the most to the pigs, deducting expenses, the corn or the clover?"—The two together are cheaper than either alone. But *can* you raise corn and put it in the crib for 10 cents a bushel. It costs me more than that to put it in the crib, after it is raised and cut up.

BUCKWHEAT FOR MANURE.—Dr. Harlan, of Wilmington, Delaware, writes me that on the 14th of last July, he had one bushel of buckwheat sowed on one-third of an acre of old potato ground, which had been manured with mineral manure for the potatoes. On the 3rd of September the buckwheat was in full bloom, and stood about four feet high. A square foot of it carefully cut, weighed 1¼ lbs. or 27 tons per acre, produced in 51 days at a cost of about 9 cents per ton. While the crop was growing, half a bushel of winter wheat was sown on the third acre. The crop was then cut with a mowing machine. Why not have plowed the crop under? "Because," says Dr. H., "'one inch of straw,' according to John Johnson, 'put on after sowing the wheat, would save it from the winds and frosts of winter,' and he also says, 'one load of manure on top, is worth two plowed under.' And do not the English farmers tell us that wheat should be sown on solid ground. Hence the reason of their heavy steam presser, used to consolidate the earth before seeding."—All this is very well, and I shall be glad to hear the result. Still I doubt if the plan will usually be a good one. The growth of the buckwheat must extract an immense amount of water from the soil, and leave the land so dry that the wheat would often fail to germinate until late in the fall.

WHEN DO YOU SOW PLASTER?—Usually in the winter, or while the ground is frozen in the spring. I do not suppose that this is the best time, but I like to draw the plaster while the roads are good, and I have no convenient place to stow it away, and so we sow it from the wagon at once. We put a boy to drive, and one man on each side the wagon, and another behind to scatter the plaster as far as they can throw it. We put on two bushels per acre, more or less. We are not particular, as plaster is cheap. This winter we are sowing it on all the clover, and on the fall-plowed fields where barley is to be sown in the spring.

MANGELS AND CARROTS ON SWAMP LAND.—Mr. F. Malcolm, of Ontario, has some swamp land which he sowed last year to mangel wurzel and white Belgian carrots. "The mangels came up badly," he says, "and what did come grew very feebly for a good while. Later in the season the tops grew very fast, but the roots were miserable. The carrots yielded a very good crop."—As a rule, I think the best mangels are grown on rather heavy, well-worked and richly manured upland. The roots are certainly more nutritious on such land than those grown on low, swampy, or alluvial soils.

NORTHERN SPY APPLES.—"S. L. S.," Orwell, Vt., raised 6 Northern Spy apples the past year that weighed 5 lbs. 6 oz. That will do. He wants me to tell him all about my orchard. There is nothing to tell. The only way to raise choice apples, like the Northern Spy, is to plant the trees on thoroughly drained land. Make and keep the soil rich, prune properly, keep the bark clean by washing the trunks and large limbs with lye or carbolic soap suds, and, last but not least, thin out the fruit when the trees are overloaded. My own orchard is in grass, and I keep the land rich by top-dressing with manure, ashes, lime, plaster, or any thing which "comes handy," and eating the grass close all the time with sheep.

Vermont Dairymen's Association.—The sixth winter meeting of this Association began at Montpelier, on the 20th of January. The Hon. E. D. Mason, of Richmond, Vt., delivered the opening address, in which he stated that the improvement in the quality of Vermont dairy products, which had resulted from the association of the dairymen, had benefited the State more than any other one thing. Papers were read upon the value of cheese as food, and upon cooking food for stock, in which no new ideas were developed. Prof. L. B. Arnold, of Rochester, N. Y., in some remarks upon the good fruits of the Association, said that the value of the Vermont butter had doubled since the Association was formed. Twenty live men in a dairy county in New York, had been able to demolish old fogy notions, and to improve the condition of the dairy interests more than all the butter makers of the whole State could have done single handed. An exhibition of butter was held at the close of the meeting; the first premium, a Fairbanks' platform scale, offered by Fairbanks & Co., St. Johnsbury, Vt., was awarded to Judge Alvey Stone, of Chittenden, Vt. Samples of "gilt edged" butter, sold in the Boston market, were exhibited, some of which were very fine, and some were regarded as inferior to common butter. A sample which sold at $1.25 per pound, was adjudged by the members to be the second in quality. The best was made by S. Adams, of Mason Village, N. H., but it was not the highest priced. So much really fine butter is seldom seen on exhibition at one time, and the Boston "gilt edged" furnished the Vermont dairymen with a standard of excellence, at which they may aim in their own dairies.

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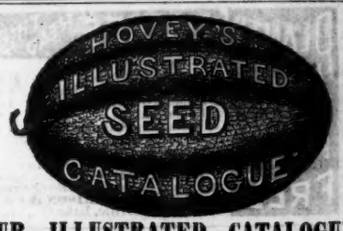

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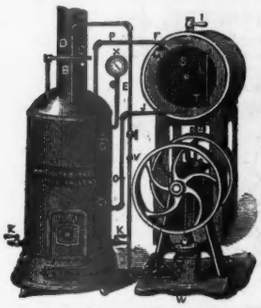

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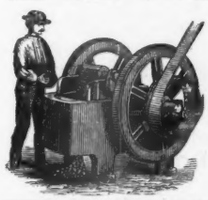

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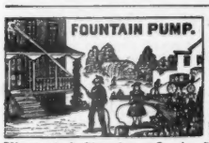

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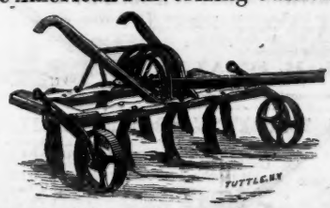

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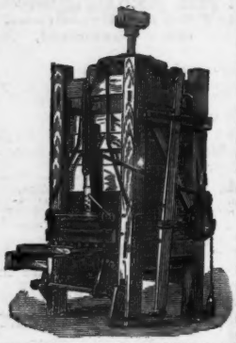

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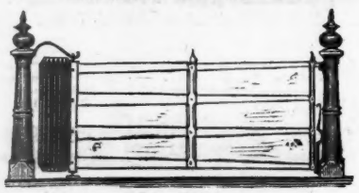

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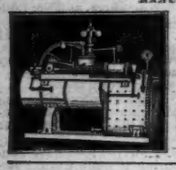

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